A Clinical Lecture

ON THE

USE OF ELASTIC TRACTION AND ELASTIC PRESSURE IN SURGERY.

Delivered at the Manchester Royal Infirmary.

By G. A. WRIGHT, F.R.C.S.,

Surgeon, Manchester Royal Infirmary.

Although it is probable that elastic traction had been applied to surgical purposes before the time of Barwell (1861), I am not aware of any systematic attempt to employ it till that date. Barwell's first paper was published in the *Medico-Chirurgical Transactions* for 1861, and a second in 1863.* Lewis Sayre in 1869 writes (*Treatment of Clubfoot*) with approval of Barwell's method of treating clubfoot, and again does so in the later edition of 1874. In 1876, Sayre, in his *Orthopaedic Surgery*, describes the use of elastic traction in cases of facial paralysis. Traction was applied by a wire hooked into the mouth and over the ear with elastic between. The elastic traction was used as an accessory to galvanism.

For torticollis Sayre used plaster strips round the head and a collar round the axilla with elastic fixed on the sound side. He also made use of the jury mast for this purpose. In 1882–3 Golding Bird, in the *Guy's Hospital Reports*, published a paper on the treatment of flat-foot and talipes, and described his method of attaching the elastic or "artificial muscle" to a steel with an encircling band below the knee. The exact details of the method of applying the traction suggested and employed by Barwell and Golding Bird need not be described now.

The use of elastic traction instead of steel springs has of course been employed in various ways, such as in artificial limbs, to produce recoil, and so straightening or flexion as might be desired, but it is of its more direct application to surgical uses that I propose to speak now. Many of these applications of the elastic recoil of rubber are, of course, in constant and familiar use, as, for example, Martin's rubber bandages for varicose veins, the principle here being much the same as that of Brodie's bandage, only employed with more efficient material.

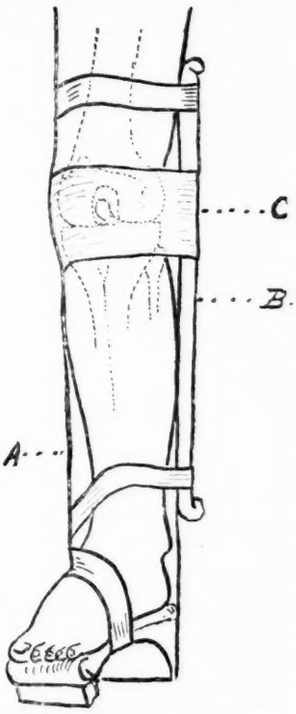

Fig. 1.—The writer's splint for genu valgum. The footpiece is rotated inwards on an axis parallel with the back splint A. The outside splint B forms the chord to the arc of the curved limb; C, the broad elastic band drawing the knee against B, and straightening the limb.

So, too, the use of bandages of flannel or other more or less elastic fabrics to reduce oedema and other forms of swelling need only be mentioned. Elastic pressure as directly applied to more local conditions—such as to naevi, and no doubt to many other tumours — would obviously commend itself, probably from very early times; and I well remember my late friend and colleague, James Hardie, advocating and using for some years "sponge pressure" to enlarged glands in the neck (lymphomatous and other) that he did not consider suitable for operation.

Esmarch's bandages and tourniquet for making limbs exsanguine and controlling bleeding before and during operations on the limbs were, if I remember rightly, introduced in the Seventies; and, though simple elevation of the limbs has largely replaced the use of the elastic bandage, it is still frequently employed for such purposes as operations for necrosis, autotransfusion, etc.

With the universal confidence given by modern surgical methods the treatment of aneurysms by elastic as well as by other forms of tourniquet has almost died out, and the method of ligature of the main vessels as a preliminary step in certain amputations has still further restricted the use of tourniquets and allied apparatus of all kinds.

The use of elastic pressure to promote absorption of fluid and other effusions into joints does not differ in principle from its employment in cases of more general oedema. The so-called Biers treatment† may also be mentioned.

Many years ago Lord Lister employed elastic pressure, after a preliminary tapping, as a means of treating hydrocephalus. I well remember trying the method, but experience did not encourage its further use, and it has been superseded by other modes of treatment.

Few, I suppose, of the present generation have seen the elastic ligature used for the removal of piles or for the cure of fistula, and fewer still can have had any experience of its employment for removal of the tongue or of tumours. Elastic ligatures are, however, occasionally still employed for the purpose of temporarily controlling the circulation in blood vessels and temporarily occluding the gut during operations.

Rubber trusses and belts have been in common use for many years.

With this hurried mention of some of the many uses to which elastic pressure has been adopted, I propose to pass on to a somewhat more detailed consideration of the use of rubber as an orthopaedic agent. In cases of flexion of joints, where no actual ankylosis is present, but immediate straightening by force is undesirable, no more valuable means of rectification exists than elastic tension. At this point it may be well to notice the advantages which rubber possesses over other means of employing tension. First, rubber has the advantage over steel springs in that its tension can be employed through a much wider range, and the strength of the tension is capable of more ready adjustment. It is much easier to apply slighter degrees of traction or pressure, much easier to arrange for the exact line of traction required, and, in addition, any apparatus needed may be readily and cheaply improvised. The appliances are indeed exceedingly cheap, easily managed, and easily replaced. A little ingenuity and some rubber cord is the stock-in-trade, though patience and care are, of course, also necessary, as living tissues cannot, as some surgeons seem to suppose, be dealt with quite as if it was a question of cabinet making or upholstering. Pressure sores are a possible result of mismanagement or neglect, and are easier to make than to repair.

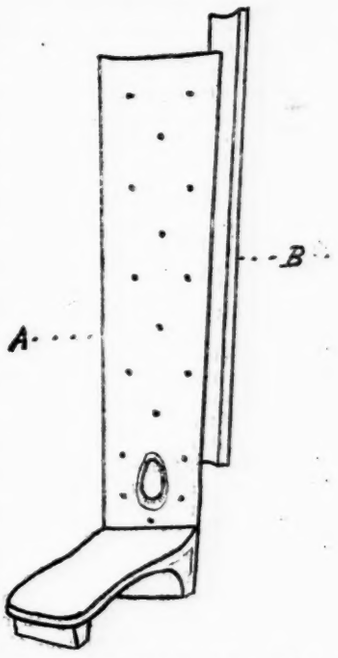

Fig. 2.—Showing the details of the splint and the rotated footpiece. A, Back splint; B, outside splint fixed to A.

For flexed joints that require straightening, all that is necessary in many cases is the application of a straight splint across the angle of flexion secured to the limb above and below the joint, but not so tightly as to prevent the

* In Malgaigne's *Orthopaedics*, 1862, there is no mention of elastic traction.

† A large part of this method is of course simply a revival of the old cupping glasses and cucurbitae.

lower segment from slipping through the bandages as the limb straightens. These bandages may be of any material, but perhaps it is better to use flannel or some slightly elastic material for the distal segment of the limb. The joint is left bare at this stage. Next an elastic bandage is carried over the joint and round the splint so as to exert the desired pressure in the required direction. The exact form of elastic material, its strength, the arrangement of suitable pads to take off or equalize pressure, and other little practical details must be adapted to each individual case.

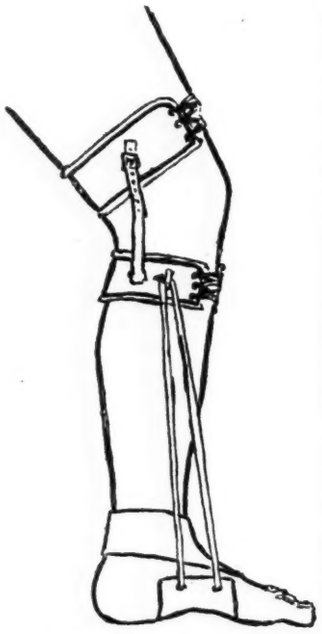

Fig. 3.—"Artificial muscle" applied for flat-foot.

The angle of flexion should be measured before and at short intervals during the treatment, to see what progress is being made, and a daily removal of the elastic is necessary at first to make sure that there is no excessive pressure.

Exactly similar appliances may be used to prevent or correct cicatricial contractions in suitable cases. It is a good plan to substitute elastic traction applied to the lower segment of the limb, either as a temporary substitute or an alternative to the elastic pressure, if for any reason direct pressure over the joint is inadvisable. Traction by weight is no doubt efficient and easy to apply in some instances, but is not always so simple and trustworthy as it appears, and it is by no means uncommon to find a weight extension applied to a leg in such a way that a little inspection will make it clear that friction at one point or another is reducing the traction power to nothing or to very little. A good example of the use of elastic traction in this way is seen in Bryant's double splint, with the use of which you are familiar. In fracture of the patella, those who, like myself, do not as a routine resort to immediate wiring, use elastic traction by the "Middlesex" or other method to approximate the fragments by steadying the lower one and drawing the upper downwards towards it. In rickety deformities the use of elastic pressure finds a very wide application. For curvatures of the shafts of the bones of the leg a straight splint applied on the concave side with elastic pressure over the convexity of the curve will straighten a large proportion of these curved limbs. Of course, the more rapidly the deformity is increasing the more likely is the use of elastic pressure to succeed. For the anterior curve of the tibia the tension of the calf muscles makes the use of elastic pressure more tedious, and in some instances nothing but cuneiform osteotomy or a splice section will succeed.

For genu valgum in slight cases an outside splint applied on similar lines is quite efficient, but in severe cases there is great difficulty in maintaining steady pressure by reason of the tendency of the limb to rotate outwards, and so take off the tension. This problem will be familiar to all who have attended at the Children's Hospital; and it was only after various trials many years ago that I found I could get over the difficulty by the use of the splint shown to you in Figs. 1 and 2. It is almost impossible to get a drawing to show the features of this splint, but Mr. Jefferson has made a sketch which is as near as we can get.

You will see that the footpiece is set inwards—that is, rotated on a vertical axis, so that the limb is fixed on the back splint in such a way that it cannot rotate outwards. The outside splint is thus maintained in its proper position, and the elastic tension rendered efficient. You will find this a useful splint if you take the trouble to have it made correctly.

Next we come to the treatment of flat-foot by elastic traction. The modification of the Golding Bird's apparatus, which I show you here, is simple in the extreme, and in my experience much more efficient and comfortable than any of the "insteps" or "socks" or "arches" that are sold. The continuous traction combined with "play" of the muscles by the varying tension not only gradually replaces the collapsed arch, but tends to strengthen the muscles. The mode of application is indicated in Fig. 3. I use this largely and in combination with, not to the exclusion of, tiptoe exercises and thickening of the sole of the boot on the inner side, etc. These means are sufficient for many of the slighter cases, but in the severe ones the "artificial muscle" is much more efficient. Adhesions must, of course, be broken down, and moulding employed by hand under an anaesthetic in some severe cases before the muscle is put on.

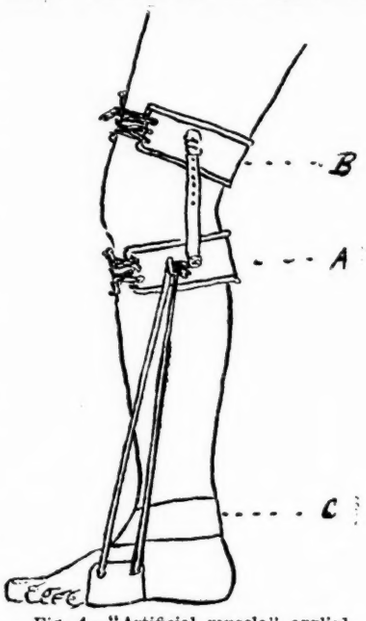

Fig. 4.—"Artificial muscle" applied for talipes equino-varus. A, Leather leg strap with hook; B, leather thigh strap which keeps A from slipping down; C, felt band encircling ankle and foot, to which is attached the elastic.

In the great group of deformities classed as talipes, both congenital and acquired, there is ample scope for the use of elastic traction, and considerable trouble is needed and some ingenuity on the part of the surgeon both to devise the exact method of application, and still more to prevent the instrument maker and the "friends" from foiling his efforts by "improvements" of their own (Fig. 5).

The mode of application is best demonstrated on a patient, but Fig. 4 will show the ordinary mode of application in talipes equino-varus. I had this arrangement for using the elastic made many years ago at the Children's Hospital, and have found it answer all purposes in one form or another. A good deal of skill is, however, called for in getting the most out of the apparatus. The exact line of traction and the point of fixation of the elastic may be varied so as to exert a rotating pull, as well as a direct drag, where such rotation is desirable. In some instances, especially of pes cavus, it is necessary to mould steel sole-plates and exert traction on these to get over difficulties due to slipping of

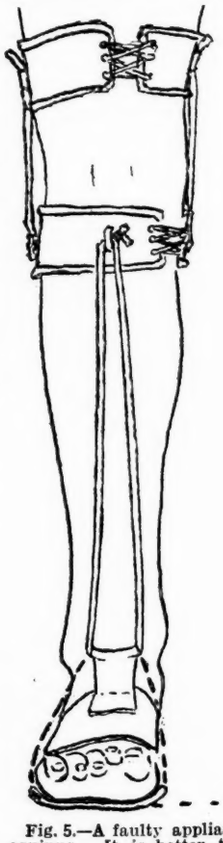

Fig. 5.—A faulty appliance for equinus. It is better to have the elastic cords attached one on each side of the steel sole-plate A, as indicated by the dotted lines.

the felt foot-sling. Other adaptations have been devised, one of which is to put a bandage over the foot first so as to increase friction and allow the sling to be fixed to this. This modification was suggested by the late Mr. Collier at Pendlebury many years ago.

The method of application shown in the sketch (Fig. 5) of an "artificial muscle" applied for talipes equinus is an example of an instrument maker's "improvement" which I do not recommend. It is much better to bring up a cord on each side, as shown in the dotted lines. Varying tension on either side can thus be arranged and much more accurate correction got. The use of "artificial muscles" does not, of course, do away with the need for tenotomy, tenoplasty, tarsectomy, and the various other operations needed in certain cases, but it is a valuable supplement to some of these, and in many cases it prevents the deformity from becoming "inveterate."

For paralytic conditions the elastic traction is a most useful adjunct to, or, in some circumstances, substitute for, tendon grafting. I will only mention the use of

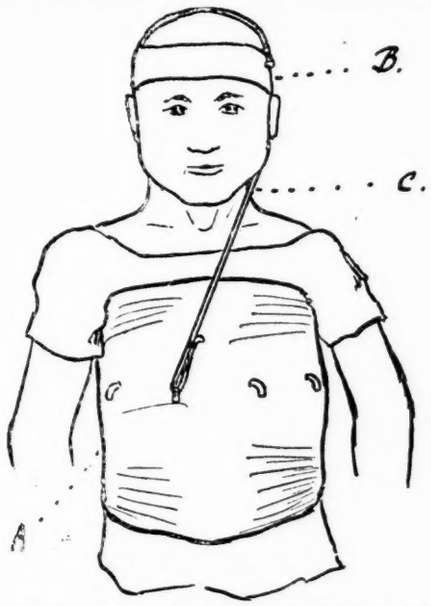

Fig. 6.—Elastic traction applied for torticollis after division of the sterno-mastoid of the opposite side. A, Plaster-of-Paris jacket with hooks; B, head band or felt cap, also with hooks; C, the "artificial muscle." Another elastic is usually necessary at the back to prevent flexion of the head.

the artificial muscle in wryneck. It is usually employed, after tenotomy, with a jacket and some sort of cap (Fig. 6). Traction is made parallel with the unaffected muscle.

There is room for the useful employment of elastic traction and pressure in many more ways in surgery than those I have mentioned, and I strongly recommend you to think out and adapt the plan to any suitable case you may have in charge. These "artificial muscles" have been ignored or decried in some of the orthopaedic and surgical text-books, but they are none the less most efficient and valuable implements, and may with advantage be used in very many cases in preference to the costly, heavy, and complicated apparatus usually recommended. As compared with the use of plaster-of-Paris, the elastic has the advantage of being more readily adjustable and safer, as well as that of giving a varying and active power.

[I am indebted to my present senior house-surgeon, G. Jefferson, M.B., and to my former house-surgeon, Hamilton Irving, F.R.C.S., for the sketches for this lecture and for some of the corresponding ones in the chapter on this subject in *Diseases of Children* (Ashby and Wright).]

THE next Congress of Diseases of Occupation will take place at Vienna in 1914. The following are the questions proposed for discussion: (1) Fatigue, its physiology and pathology; influence of professional occupation on the nervous system; night work. (2) Work in hot air and in moist air. (3) Anthrax. (4) Pneumoconioses (diseases caused by the inhalation of dust). (5) Accidents caused by electricity. (6) Industrial poisoning, by aniline, mercury, lead, etc. The general secretary of the Congress is Privatdocent Dr. Teleky, IX Türkenstrasse, 23, Vienna.

An Address
ON
HIGH BLOOD PRESSURE IN ARTERIO-SCLEROSIS.

DELIVERED AT THE ACADEMY OF MEDICINE, TORONTO.

BY

R. D. RUDOLF, M.D., F.R.C.P.,

PROFESSOR OF THERAPEUTICS, UNIVERSITY OF TORONTO.

THE occurrence of high blood pressure in arterio-sclerosis has been a much-discussed subject in recent years, since the clinical estimation of this pressure was made possible by von Basch in 1876.

At first high blood pressure was described as a constant symptom in arterial thickening, and even as a measure of the degree of this thickening,[1] so that, although it was admitted that a high pressure might exist without arterio-sclerosis, it was greatly doubted if any considerable degree of arterial disease could be present if the pressure were not raised.

But soon observers began to record cases of even well-marked arterial sclerosis in which the pressure was not raised, and even read below the normal, throughout the illness. Thus Groedel of Nauheim recorded a series of 500 cases of arterio-sclerosis, in 35 per cent. of which there was no rise in pressure, and in 18 per cent. only a slight one.[1] Several years ago Drs. Arthur Ellis and Bruce Robertson investigated the matter with me in St. Michael's and the General Hospitals, and found that in only about 50 per cent. of well-marked cases of arterial thickening was the blood pressure above normal, and since then I have seen several fatal cases of the disease in which the pressure was not raised.

The next view that became prevalent was that arterio-sclerosis only produced a high blood pressure when the splanchnic system of arteries was involved. A high blood pressure means a hypertrophied left heart, and Hasenfeld and Hirsch showed by very accurate weighments[2] that an enlargement of the left ventricle only occurred in arterial sclerosis when the disease involved the splanchnic vessels or the aorta above the diaphragm. But rise in blood pressure may occur from many other causes than arterial thickening, and because an individual happens to be arterio-sclerotic he is not exempt from such other causes. Probably one may say without much fear of contradiction that when in a case of arterial thickening a raised blood pressure is detected, such a rise may be due to one or more of the following causes:

1. Toxaemia; such toxaemia being at the same time the direct cause of the arterial disease by directly poisoning the vessel walls. A good example of such a poison is nicotine, which directly raises the blood pressure, and according to many authorities also acts directly upon the vessel wall as a poison. Probably there are very many such toxins manufactured in the alimentary tract or in the tissues of the body.

2. Some toxin which has nothing to do with the associated arterio-sclerosis, but is directly raising the pressure. One might theorize that in an arterio-sclerotic patient the adrenal tissues might be from time to time overactive, and might thus produce periodic rises in pressure, as might occur in individuals not arterio-sclerotic.

3. Compensatory. It is well known that if some vital tissues, such as those in the medulla, be rendered anaemic—say, by the pressure of a new growth—the blood pressure rises enormously, seemingly with the object of forcing blood at all hazards into the part. If such a part of the brain be supplied by a vessel the lumen of which is much narrowed by disease, it is likely that the blood pressure will rise from the same cause.

4. Simple nervousness. It is very common to find the pressure high from nervousness, and if an arterio sclerotic happens to be also a neurasthenic, his pressure may be high from this cause alone.

5. Lastly, the raised pressure may be due to the arterial disease alone, and in this case probably the splanchnic vessels, or the aorta leading to them, are extensively diseased.

While the rôle of arterio-sclerosis in producing hyperpiesis is thus open to much limitation, the rôle of hyperpiesis as a producer of arterial disease seems to be an important one. Given a constantly or occasionally increased blood pressure within the arterial tree for any length of time and the arteries will tend to be dilated, and in order to prevent this dilatation the arterial walls will tend to hypertrophy and thicken, as will also the wall of the left ventricle. As to the exact way in which increased intra-arterial pressure brings about disease of the walls, nothing may be said here, but the fact is undoubted that, given sufficient arterial pressure, we will sooner or later get disease of the walls. This will occur very much sooner in some individuals than in others. Experimentally this has been shown by the effect of clamping the aorta even for a short time, as also by the administration of adrenalin, which greatly raises the blood pressure. In both cases the vessels soon show sclerotic changes. Clinically we see the disease in people who have undergone great exertion, physical or mental, with consequent raising of the pressure, and *post mortem* the change is seen in the pulmonary circulation in cases of mitral stenosis. Dr. T. D. Savill[4] showed some years ago by *post-mortem* returns how the media of the arteries of the lower extremities were nearly always more hypertrophied than those of the upper; and lately Dr. O. K. Williamson[5] demonstrated the same thing in another way. He measured the pressure of numerous arterio-sclerotic people, both in the upper and the lower extremities, and found that, with the limbs always at the heart level, the *apparent* pressure—due to the thickened walls—was always higher in the lower than the upper extremities. In normal individuals the pressure was the same in both, and he hence concludes that the higher readings from the lower limbs is due to the extra thickening of the walls here. The matter was hotly discussed at the Royal Society of Medicine, and Dr. Williamson quite held his own. We have been repeating his work in the Toronto General Hospital, and so far our results would tend to confirm his. Dr. Harry Campbell[3] endeavours to prove that, at least in small and medium-sized arteries, which are in a condition of hypertonus, the muscular coat bears all the strain, and it is only when the muscular coat gives way that the strain can come upon the other tissues.

There have been many classifications of arterio-sclerosis, and perhaps the one that best fits in with what we see clinically is the etiological one of Sir T. Clifford Allbutt. He divides all cases into three classes: (1) Those due to hyperpiesis; (2) those of a toxic or infective nature; (3) involutionary cases. In the first class the raised blood pressure precedes and produces the sclerosis. In the second the pressure may not be raised, or may be so at a late stage, and is the result of the disease. In the third—the senile type—it is usually absent, or, if present, is an intercurrent event, and very open to dietetic and medicinal influence.

One must keep in mind also the terminal cases of arterio-sclerosis, where, with a big heart and thickened vessels, we find a low pressure. I have found a number of such cases in the records of the General Hospital, and can recall a number in my own experience. There *had* been high pressure in such cases for years, as shown by the great heart, but this pump was now giving out.

The question arises as to our ability to detect and measure an increased blood pressure. Many instruments have been invented within the last few years with this object, and there are several that have been proved by animal experiment to be very correct, the pressure being taken by one of them in one limb, while at the same time it was being measured in another by a manometer directly connected with the interior of a vessel. But whether we can always measure the pressure within a vessel, by seeing what external pressure is necessary to stop the pulse passing along it, is open to question.

If we were dealing with an inanimate elastic tubing it would be an easy matter, but the artery is a living structure and varies greatly in tone and hence in resistance to compression. It is a common thing to feel a vessel firmly contracted—for example, in peritonitis—and it must surely take a great deal of external pressure to eliminate the lumen of such an artery, entirely apart from the pressure within the vessel. Dr. William Russell has insisted much upon this point,[6] and there seems to be much in what he says. In cases of intermittent claudication the vessels of the limb may so contract that no pulse may be felt in the distal branches.[11] If the contraction of the artery were not *quite* sufficient to stop the pulse one would probably get an altogether too high reading of the general blood pressure if measured in such a limb, as the spastic vessel would resist the external pressure.

As to whether the sclerosis of the artery actually being used in the measurement of the pressure modifies the reading to any extent, it may be recalled that Dr. C. J. Martin about ten years ago seemed to prove by many experiments made upon sclerosed arteries removed from the body that even an extreme degree of hardening did not give rise to a resistance to compression of more than 10 mm. Hg. But more recently Drs. Herringham and Womack found that the resistance of a thickened artery might amount to from 4 to 34 mm. Hg, and Dr. O. K. Williamson found the same thing.[5] Hence, when the vessel of the limb used for the blood pressure measurement be felt to be much thickened we must considerably discount the reading. In no case are we justified in accepting a high reading when the heart shows no signs of enlargement, nor is the aortic second sound accentuated.

When arterio-sclerosis has caused a rise in the arterial blood pressure, this rise is chiefly in the systolic pressure. This is only what we would expect, as the rigid condition of the vessel walls makes most of the force of the ventricular systole pass right on, as in a rigid tube, say a lead pipe, it would quite do.

> At a high arterial pressure the distensibility of the arteries is distinctly diminished, and any increase in the systolic pulse volume must raise the blood pressure far more than a corresponding increase at lower pressure. . . . Thus, in all cases of arterio-sclerosis, where there is a rise in blood pressure, this rise is chiefly in the systolic pressure, on account of the lessened distensibility of the arterial walls, due either to the high tension or the disease. (Janeway.[7])

In the condition of high blood pressure from pure vaso-motor spasm, as in peritonitis, the diastolic pressure is the one chiefly raised. It would probably be safe to argue that in a case of arterio-sclerosis with increased pressure the relative difference between the systolic and the diastolic pressures would be a measure of the degree to which the increased pressure was due to the sclerosis of the arterial tract between the heart and the point at which the pulse is being felt.

TREATMENT.

We are only here concerned with the treatment of high blood pressure in arterial disease, and it might well be said that if the pressure were due actually to the sclerosis and to that alone, then its lowering could only be brought about, and that only very temporarily, by bleeding. But, as has been shown, the hyperpiesis is nearly always not directly due to such fibrous thickening, but rather to associated spasm of the arterioles, and, one might probably add, capillaries. Such spasm is in the great majority of cases of toxic origin, and it is to the lessening of this toxaemia that our attention must be directed. The nature of this toxaemia has been the object of much research, and it is generally recognized now that it is due to nitrogenous bodies. As Dr. William Russell says, the whole problem of hypertonus centres round the three factors of hereditary character, pabulum, and excretion. Some individuals inherit vessels that no toxin of dietetic origin scarcely will affect, while others suffer on the least indiscretion. As regards the pabulum, the fault may be in mere quantity of proteid taken, or in the way in which this is dealt with in the alimentary tract. In this tract certain bodies, technically known as the aromatic series, are produced by the decomposition of proteid materials; and these being absorbed may, either by direct action on the vessels or in some less direct way, produce vaso-constriction. These poisons must first pass through the liver, and, if this organ be active, may be destroyed there and do no harm. Eck's experiment well illustrates this. He found that if in animals he tied the portal vein and then connected the lower end of this vein with the inferior vena cava and fed the animals on milk, they would live for some time; but if, on the other hand, they were given even a small quantity of meat diet, they rapidly succumbed, with dyspnoea and other toxic symptoms.

Milk contains proteid, of course, but it seems to be specially the proteid of meat and eggs that produces most toxins. If the toxins once reach the blood they are chiefly got rid of by the kidneys. Hence it is that Huchard puts as the second most important factor in the production of the presclerotic stage of arterio-sclerosis insufficiency of hepatic and renal functions.[12]

Sir T. Clifford Allbutt lays down the good rule that every individual of 40 and over should at intervals of five years or so have his blood pressure measured in order that he may know in time if he be tending towards arterio-sclerosis. One may emphasize here that the so-called presclerotic stage continues long after the further stages of actual sclerosis and even heart involvement have become evident, and that in order to prevent the condition getting worse we must continue to treat the toxic condition.

One might emphasize this point by the following classification of the disease:

First Stage.—(1) Toxaemia.
Second Stage.—(1) Toxaemia; (2) organic change in walls of vessels and left heart, and probably in kidney.
Third Stage.—(1) Toxaemia; (2) organic change in walls of vessels and left heart, and probably in kidney; (3) breaking down of the diseased circulatory apparatus.

Take a man of, say, 45 in whom we find a systolic pressure of some 160 mm. Hg. He seems well, but probably has a slight increase in the amount of urine, which will be too watery and may show a trace of albumen occasionally and probably now and then a few hyaline casts.

If this patient show a family tendency to arterial disease so much the worse. If in such an individual we cut down his animal proteids, putting him chiefly on a lacto-vegetarian diet, cut out excessive smoking and the use of alcohol, and give him some saline every morning, with an occasional mercurial purge, he will probably improve very much and his pressure will come down to normal or nearly so, and, as long as he keeps to such simple rules, may remain so. If such a régime be not sufficient regular small doses of potassium iodide may help very much. Pharmacologically Stockman showed years ago that this drug had no effect in lowering blood pressure except in enormous doses, but clinically nothing seems to be more evident than its effect in hyperpiesis due to toxaemia. Probably it helps in elimination. Every clinician has seen its good effect in relieving the pain in aneurysm. Diuretics may be useful, especially theobromine.

The treatment so far mentioned is applicable to all cases of arterio-sclerosis where the pressure is high, whether the case be early or more advanced. But if, in spite of it all, the pressure remain too high, and perhaps symptoms of cerebral trouble—such as transient affection of speech or even paralysis—are showing, then severe purgatives or even bleeding may be required. But the question always arises here whether we should interfere actively with a high pressure merely because it be high—whether this pressure may not be compensatory, and the best thing under the circumstances for the crippled patient. May not his symptoms be due to an anaemia of a vital part of the brain, owing to a sclerosed and narrowed vessel of supply? Here the high pressure may be keeping him alive. Again, thrombosis may be occurring in such a vessel, and the most likely thing to increase such clotting will be to reduce the flow of blood through the artery, and to increase the coagulability of the blood, as may be done in both instances by the operation of bleeding.

It is probable that no one rule can be laid down about the care of high blood pressure in cases of advanced arterio-sclerosis beyond those of diet and other simple means applicable to the presclerotic stage.

Moreover, it is wonderful how well many people are with blood pressures that may at first surprise us, and not only well, *but may remain so for years*. Especially in stout individuals, we may find pressures reading even over 200 mm. Hg, in whom there may be practically no symptoms.

Occasionally, however, the pressure is producing some trouble that makes it urgent that we reduce it, and here blood-letting or the use of vaso-dilators may be of much value.

As regards blood-letting, most of us have seen good results from an epistaxis in an arterio-sclerotic, and such results are wonderfully lasting. If a normal animal be bled, especially from a vein, we can reduce the arterial pressure easily, but a bleeding, even amounting to half of the total blood in the body, only reduces the pressure for a very short time. It is different in cases of toxaemia, and the chief cause of the very lasting results that are obtained is probably that by bleeding we are removing the toxins that are the chief cause of the raised pressure.

One sees the good effect of bleeding also in uraemia, where it is evidently by removal of toxins that it acts. Osler states the case well when he says:

> In cases that come under observation for the first time with dyspnoea, slight lividity and signs of cardiac insufficiency, venesection is indicated. In some instances, with very high tension, striking relief is afforded by the abstraction of 20 oz. of blood.[8]

With regard to the use of the vaso-dilators, it is found that they usually act even in profound cases of arterio-sclerosis, and recently Drs. Wallace and Ringer[9] have shown that their action is more prolonged here than in normal vessels. One might put them in the following order as regards their speed of action and associated evanescence of effect: Amyl nitrite, nitroglycerine, spiritus aetheris nitrosi, sodium nitrite, erythrol nitrate, and, lastly and most lasting, the nitrate of mannitol.

Dr. Edwin Matthew[10] last year published some work on the action of the different nitrites in high blood pressure, which may be summarized as follows:

1. The effect of nitroglycerine in $\frac{1}{100}$-grain doses lasts about one hour, but a tolerance is rapidly established.
2. The effects of sodium nitrite in 2-grain doses last about two hours, and no tolerance occurs.
3. Erythrol tetranitrate in $\frac{1}{2}$-grain doses lasts about six hours, and no tolerance occurs.
4. Mannitol nitrate in 1-grain doses acts as the erythrol, but effect even more prolonged, and hence to be preferred.

With these drugs he found it possible to keep the abnormal pressure down about 30 mm. Hg, and such often kept the patient comfortable and free from pressing symptoms. It is interesting to note that he could get no results with tabloids of nitroglycerine or erythrol nitrate, but got them at once with solutions of the former and chocolate tablets of the latter.

As regards the sweet spirits of nitre, it is well to note that it is often very weak, or even inert. In a recent investigation made in the laboratory of the Inland Revenue Department of Canada it was found that 63 per cent. of samples examined were adulterated and that some contained no ethyl nitrite at all. There is no standard for strength in the British or Canadian pharmacopoeias, but in the American it must contain 4 per cent. of the ethyl nitrite when freshly prepared. When made according to the *B.P.* directions, it should contain from 2.75 to 1.75 per cent. Sodium nitrite also rapidly oxidizes and thus loses its action, so should be freshly prepared. Physicians probably often fail to get the action looked for with these drugs on account of these depreciations.

Various other and milder methods of reducing blood pressure in arterio-sclerosis are often used, such as baths, massage and gymnastic exercises, and static electricity; but no attempt has been here made to discuss them all, and probably most of the best known and most commonly used ones have been mentioned.

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[1] T. Clifford Allbutt, Clinical Remarks on Arterio-Sclerosis, British Medical Journal, October 20th, 1906, p. 1005. [2] T. C. Janeway, *The Clinical Study of Blood Pressure*, p. 143. [3] Harry Campbell, Studies of the Circulation, *Lancet*, January 15th, 1910. [4] T. T. Savill, *Trans. Path. Soc. Lond.*, 1904, p. 375. [5] O. K. Williamson, *Proc. Roy. Soc. of Med.*, Medical Section, 1909, p. 229. [6] Wm. Russell, *Hypertonus and Arterio-Sclerosis*, p. 70. [7] T. C. Janeway, *The Clinical Study of Blood Pressure*, p. 189. [8] William Osler, *Practice of Medicine*, p. 853. [9] Wallace and Ringer, The Use of Nitrites to Lower Blood Pressure, *New York Med. Journ.*, June 12th, 1909. [10] Edwin Matthew, Vaso-Dilators in High Blood Pressure, *Quar. Journ. of Med.*, April, 1909, p. 261. [11] F. W. Mott, *System of Medicine*, Allbutt and Rolleston, vol. vi, p. 612. [12] H. Huchard, *Les maladies du cœur et leur traitement*, p. 120.

The Chelsea Hospital for Women has received a grant of £105 from the Court of Common Council of the City of London.

The annual general meeting of the British Medical Benevolent Fund Guild will be held at the New Hospital for Women, 144, Euston Road, N.W., on Tuesday, November 29th. Lady Frederick Brudenell Bruce will take the chair at 3.30 p.m.

THE REACTION OF THE HEART TO DIGITALIS WHEN THE AURICLE IS FIBRILLATING.*

By THOMAS LEWIS, M.D., D.Sc.,
BEIT MEMORIAL RESEARCH FELLOW; UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL.

In a communication published in *Heart* in March of this year[1] it was shown that the completely irregular pulse,† which is so frequently encountered in clinical work, and which is peculiarly associated with advanced mitral stenosis and arterio-sclerosis, is the result of a condition

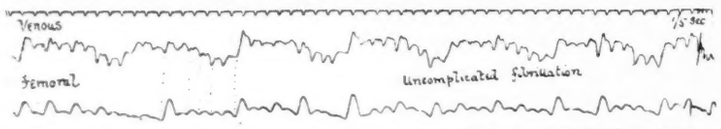

Fig. 1.—Venous and femoral curves from a dog during a period of auricular fibrillation. The venous curve is ventricular in form. The pulse is completely irregular.

well known to experimentalists—namely, fibrillation of the auricle.

I do not propose to reiterate at the present time the detailed evidence upon which this conclusion rests, but content myself by stating that the conclusion is in absolute accord with all the known characters of the experimental and clinical conditions. It may be stated that a similar irregularity of the heart occurs in horses, and since the publication of my full paper I have had a further opportunity of examining the heart of such an animal beating *in situ*. The auricle was fibrillating.

When the heart is inspected in an animal in which the auricle (speaking of right and left auricles as a whole) is fibrillating, this chamber is found to be in a state of continued diastole. No co-ordinate contraction of its walls interrupts its condition of distension, but careful examination discovers a flickering or tremulous state of the musculature. The muscle seems to be alive with the movement, yet no given point shows any appreciable excursion. The interpretation of the phenomena witnessed is a simple one. In a normally beating heart the auricle responds to rhythmic impulses generated in the neighbourhood of its junction with the superior vena cava,[2] and it contracts as a whole, expelling its contents into the ventricle. The movement of the auricle is a rapid one, and there is shortening of the muscle in every direction. It is supposed that in the fibrillatory state this normal impulse formation is in abeyance, and that in its stead numerous and small areas of the hyper-irritable musculature are building up independent and pathological impulses; it is further supposed that the resulting waves of contraction, propagated from each and all of the new impulse centres, meet each other in the walls of the auricle without travelling far, and that as a consequence the whole of the contractile substance of this chamber is thrown into delirium. There is no co-ordinate contraction, meaning by co-ordinate contraction universal contraction of the fibres in a definite order and eventually together. There is a condition of asystole.

Now, while the auricle is in this state the *individual* ventricular systoles are co-ordinate; but the chamber beats in a rapid and highly irregular fashion. Thus, while each contraction of the ventricle is of a similar nature to a normal systole, the sequence of contraction presents no rhythm, but has a completely disordered character. In explanation of this gross irregularity in the ventricle it is supposed that occasional impulses escape in a haphazard fashion from the turmoil in the auricle, and that, like normal impulses, they are transmitted across the junctional tissues, the auriculo-ventricular bundle and its arborizations, to the ventricle.

It is upon a heart whose mechanism is disturbed in this way that digitalis exerts its most conspicuous action. Given in full doses it frequently produces a marked retardation of the ventricular rate. In inquiring into the cause of the retardation it is essential, first, that the condition of the auricle should be remembered; and, secondly, that we examine the known ways in which ventricular slowing may be brought about when the auricle is fibrillating. In the experimental heart, when fibrillation of the auricle is present, retardation of the ventricular rate follows certain definite procedures. It results from stimulation of the vagus nerve (Fig. 3), and it has been suggested by Professor Cushny[3] that such slowing is the outcome of an increased obstruction to the passage of impulses across the auriculo-ventricular junction; for it is known that the conductive functions of the junctional tissues are markedly depressed by inhibitory impulses, and that heart-block in an otherwise normal heart is a ready consequence of vagus excitation (Fig. 2).

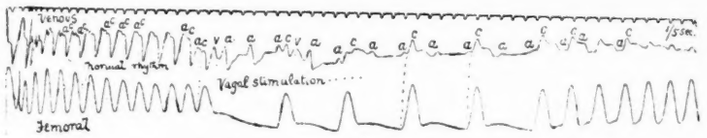

Fig. 2.—Venous and femoral curves showing the effect of vagus stimulation. With the stimulation 2:1 heart-block appears.

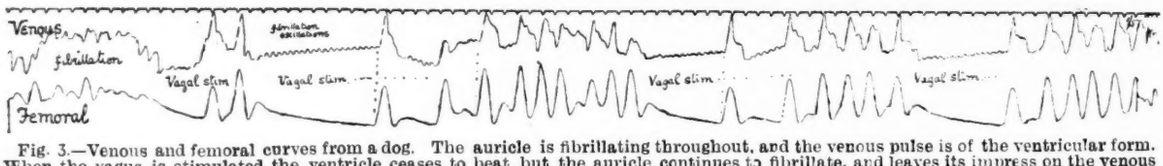

Fig. 3.—Venous and femoral curves from a dog. The auricle is fibrillating throughout, and the venous pulse is of the ventricular form. When the vagus is stimulated the ventricle ceases to beat, but the auricle continues to fibrillate, and leaves its impress on the venous curve in the form of small and rapid oscillations.

The curve now demonstrated (Fig. 4) strongly supports this view. It shows simultaneous venous and arterial curves from a dog in which the auricle is fibrillating. Accompanying stimulation of the vagus the ventricular rate is diminished, while the fibrillation, identified by the small and rapid oscillations in the venous curve, proceeds. A few seconds later the fibrillation terminates, and the normal and co-ordinate auricular contractions are re-established. When these rhythmic contractions of the auricle appear, it is seen that only one in two transmits an impulse to the ventricle and excites a response. The slowing of the ventricle at this stage is the result of heart-block; the presumption is that the slowing previously manifested was of similar origin.

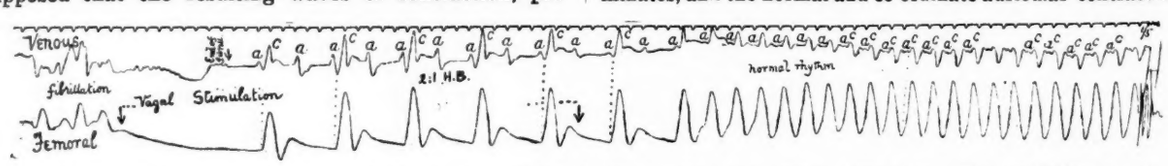

Fig. 4.—The end of a period of auricular fibrillation. Its termination results from vagus stimulation. The oscillations cease where the fibrillation ends, and from this point co-ordinate auricular contractions are represented. A condition of 2:1 heart-block is present. To show that the ventricular slowing while the auricle is fibrillating is the outcome of heart-block.

It has been shown by Fredericq[4] that the ventricle beats slowly and regularly when the auriculo-ventricular

* A paper read in the Section of Pharmacology at the annual meeting of the British Medical Association, July, 1910.

† Or "pulsus irregularis perpetuus." The rhythm of the heart has passed under the terms "arrhythmia perpetua," "nodal rhythm," and chronic arrhythmia."

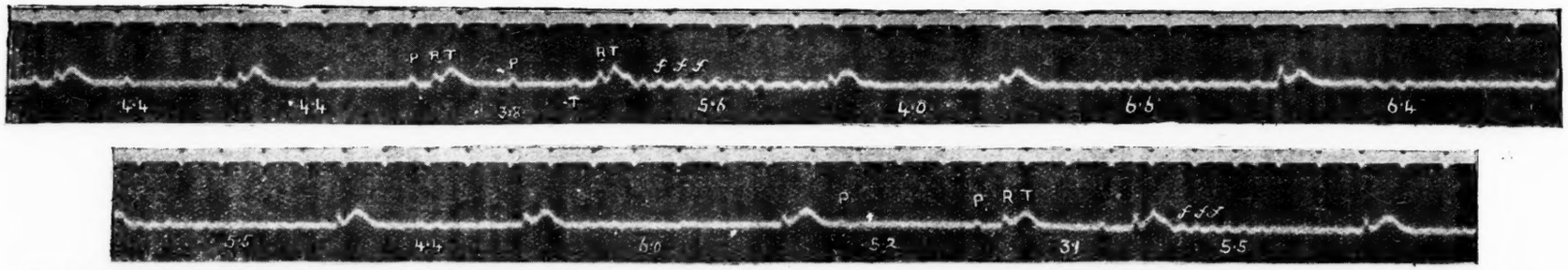

Fig. 5.—A continuous electro-cardiographic curve taken from a cat during a period of asphyxia. The curve starts when 2:1 heart-block is established; the auricle is represented by the variations P: the ventricle is represented by the variations R and T. At the point marked by the arrow in the upper curve the auricle was faradized, and fibrillation ensued. The type of curve immediately changes. The normal auricular waves are replaced by the fibrillation waves (*f f f*). At the same time, though the ventricle shows no marked change of rate, its rhythm becomes irregular. The curve is continued, and shows the breakback from fibrillation + heart-block to a rhythm in which 2:1 heart-block is present. At the end of the lower curve the auricle is once more faradized and fibrillation ensues. The curves show the effect of heart-block in hindering the transmission of impulses from a fibrillating auricle.

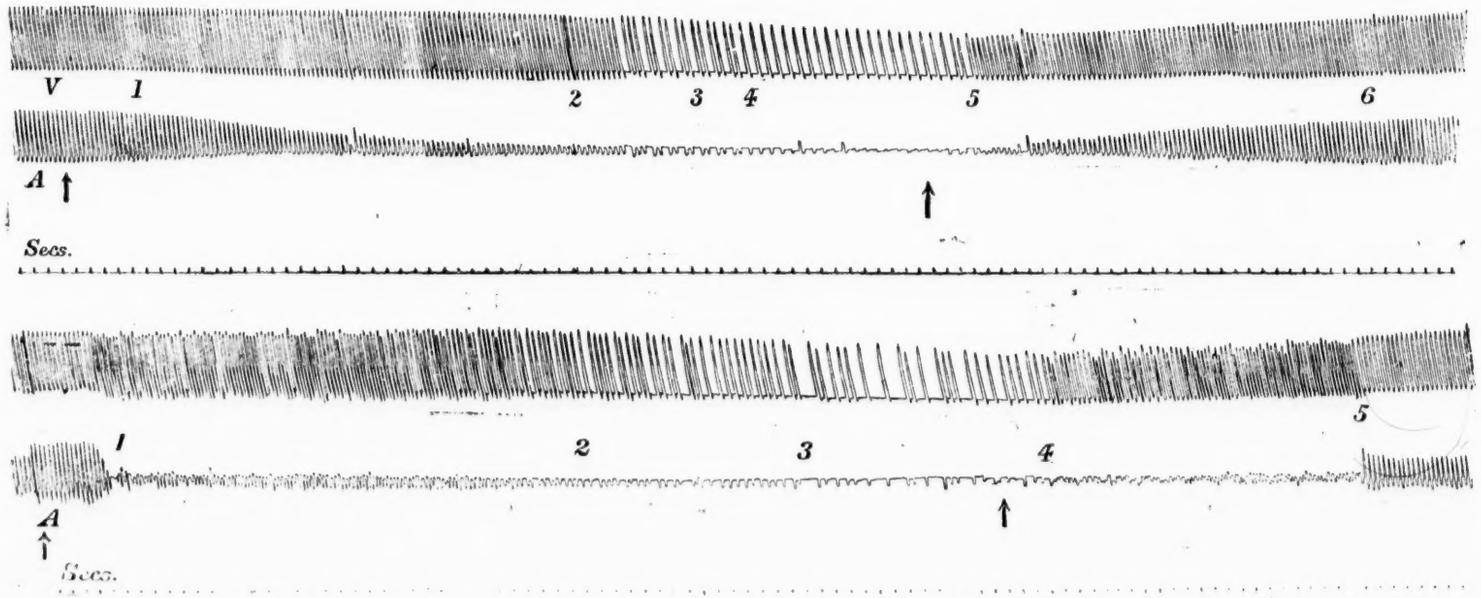

Fig. 6.—Two curves taken from a cat during successive periods of asphyxia. V = Myocardiogram of ventricle; A = myocardiogram of auricle. The periods of asphyxia begin and end where the arrows are placed. The first curve is of uncomplicated asphyxia. The second curve is of a similar asphyxial period, during the whole of which (from the points 1 to 5) the auricle was faradized and sent into fibrillation. At a point lying between 2 and 3 in the upper curve heart-block occurs as the result of the asphyxia. Up to this point the excursion of the auricle has greatly decreased, and from this point onwards the movements of the curve represent tug from the ventricle alone. At 5 the auricular contractions are again seen, and once more increase in excursion. The heart-block starts with an occasional dropped beat. At 4, 2:1 heart-block is seen. At the point marked 5, shortly after the onset of respiration, the heart-block disappears. In the second curve, and at the point marked 1, fibrillation of the auricle begins. It is accompanied by an increase of ventricular rate and by irregularity of the ventricle, seen in the outlines of the ventricular curve. From the point marked 2 the rate of the ventricle *gradually* decreases up to a point lying between 3 and 4. Just before point 4 respiration starts once more, and the rate of the ventricle increases. Again, at the point marked 5 fibrillation ceases, and the normal sequence of heart contraction is resumed. The two curves show the effect of heart-block upon the transmission of impulses from auricle to ventricle during co-ordinate action and fibrillation of the auricle. The obstruction to the passage of impulses shows earlier when the auricle is fibrillating; in the one case the curve shows an abrupt slowing of the ventricle; in the other case retardation is more gradual

bundle is transected, and while the auricle is fibrillating—a fact which demonstrates that all auricular impulses to it are impeded by such a procedure. As a consequence the ventricle assumes its own spontaneous slow and regular rhythm. Partial heart-block is readily induced by asphyxia, and, in conjunction with Dr. Mathison, I have utilized this fact to show that when a condition of heart-block is present, the production of auricular fibrillation, while disturbing the regularity of the ventricular contractions, fails to bring about the marked increase of rate which usually accompanies its onset in the normal animal. It may be similarly shown that when the auricle is fibrillating the production of partial heart-block reduces the rate of the ventricular responses (Figs. 5 and 6).

The clinical condition, auricular fibrillation, has been seen in association with heart-block of several grades; with partial heart-block in the curves of Dr. G. A. Gibson,[5] by Dr. Mackenzie,[6] and myself; in all these cases the ventricular rate was slow; and a case of auricular fibrillation has been recently reported in which complete heart-block in an epileptic and syphilitic subject was probably present.[7] In this case the ventricle beat regularly at a rate of approximately 30 per minute.

We see, therefore, that the known ways in which the ventricular action may be retarded, whether the fibrillation is clinical or experimental, are of one type; in all instances heart-block is either probable or proved. What more natural than to suspect that digitalis acts in a similar manner when it produces ventricular slowing in the clinical condition? For digitalis has been found to induce heart-block experimentally,[8] and clinically a similar action has been described by Mackenzie,[9] and has been fully substantiated by a number of more recent workers.

The case for which I plead—that digitalis slowing is a result of heart-block when the auricle is fibrillating—is very materially strengthened when the following facts are considered: The type of case in which, with the normal or co-ordinate contraction of the auricle present, heart-block is readily provoked by digitalis administration, is the advanced rheumatic heart, and *a fortiori* the heart affected by mitral stenosis. It is a striking fact that of all cases of clinical auricular fibrillation, those which are of rheumatic origin, and *a fortiori* those affected by mitral stenosis, show the characteristic slowing of digitalis to most advantage. This is the type of case in which digitalis acts in so magic a fashion, and in which the rate of the ventricle is set by the dosage employed; it is the type of case in which the ventricular rhythm may be sometimes reduced to regularity, and in which the rate may be reduced to that consistent with a true ventricular rhythm.

On the other hand, there is the type of patient in whom no reaction ensues upon the exhibition of the drug. Now Mackenzie has shown that digitalis produces heart-block in those patients in whom a previous defect of conduction exists. The proposition I put to you is a parallel one, namely, that the ventricle is retarded in auricular fibrillation by digitalis when there is a pre-existing damage of the junctional tissues, a damage which is frequently demonstrable in cases of rheumatic heart affection.*

The complete evidence in support of this proposition will require time for its collection. We require observations upon patients in the early stages of the affection. It is requisite that it be demonstrated that a large proportion of the cases which react to digitalis had a deficiency of auriculo-ventricular conduction *before* the onset of fibrillation. I can offer the facts in regard to three cases[10] only at the present time. In these three cases the heart-rhythm was observed before the onset of fibrillation, or during the intervals of rest between attacks. The cases were thoroughly tested with digitalis during the stage of fibrillation. Two cases, in which no previous defect of conduction could be demonstrated, failed to show a trace of reaction to the drug. The third case in which deficiency of conduction was clearly established reacted repeatedly and in the most typical manner.

The view suggested, therefore, is that the ventricular rate is retarded in clinical auricular fibrillation by the action of digitalis upon the junctional tissues, the functions of which are already in a depressed state; and this view is put forward, together with an indication of the direction from which the evidence will come, which, if favourable, should convert what may be now regarded as a proposition into a well-established conclusion.

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[1] Lewis, *Heart*, 1909-10, i, 306. [2] Lewis, ibid., 1910-11, ii, 23. [3] Cushny and Edmunds, *Amer. Journ. Med. Sci.*, 1907, cxxxiii. 66. [4] Fredericq, *Archiv. Internat. d. Physiol.*, 1904-5, ii, 281. [5] Gibson, BRITISH MEDICAL JOURNAL, 1906, ii, 1113. [6] Mackenzie, *Heart*, 1909-10, i, 23. [7] Lewis, ibid., 1909, i, 349; and Lewis and Mack, *Quart. Journ. of Med.*, 1909-10, iii, 273. [8] Cushny, *Journ. Exper. Med.*, 1897, ii, 233. [9] Mackenzie, BRITISH MEDICAL JOURNAL, 1905, i, 587. [10] Lewis, *Heart*, 1909-10, i, 306 (cases 2, 10, and 11).

*The view that digitalis acts by the production of heart-block was originally put forward in the BRITISH MEDICAL JOURNAL of November 2 th, 1909, and was more fully considered in *Heart*, 1909-10, 1, 349.

VARIATIONS OF THE FERMENTATION PROPERTIES OF THE B. TYPHOSUS.*

BY W. J. PENFOLD, M.B., B.HY., M.R.C.S.,
BRITISH MEDICAL ASSOCIATION SCHOLAR.
(From the Lister Institute, London.)

Lactose.

DR. TWORT has shown that the *B. typhosus* can be made to ferment lactose-peptone water. He found that two years' growth on lactose-peptone water was necessary to produce this strain. I have examined this new variety and find: (1) It is a genuine *B. typhosus*. (2) On plating on lactose it always gives rise to mixed plates of fermenting and non-fermenting colonies. Subculture of fermenting colonies on lactose plates gives again a mixture of fermenting and non-fermenting colonies, so that the character is always tending to disappear and requires constant growth on lactose for its retention.

If the atavistic non-fermenting colonies are retrained on lactose-agar slopes, after a variable number of subcultures they take on the fermenting power again. In this process of training, when the efficient fermenting strain is arising they show papillae-formation on the lactose, the papillae being very large and acid in reaction as indicated by neutral red.

I have attempted the complete training of a large number of strains myself, and have only got one to the stage of very slightly fermenting lactose-peptone water in two days. I have not yet got red colonies out of it. This has required sixteen monthly subcultures.

Dulcite.

I have shown † that *B. typhosus* requires about ten days to produce acidity in dulcite-peptone water. The period can be readily shortened to one day by one to three subcultures on dulcite media at monthly intervals. Normal *B. typhosus* produces neutral or alkaline colonies on dulcite agar. About the fifth day, in one-third of the strains papilliform projections arise on the colonies, which become acid in a day or two. Subcultures from these papillae give rise to fermenting colonies. Other strains of *B. typhosus* give papillae about eight to ten days after inoculation. These do not acquire an acid reaction. Occasionally strains do not show papillae on this medium.

Plating on dulcite agar daily from dulcite broths of *B. typhosus* shows the history of the variation. It usually takes two to ten days to produce fermenting elements on dulcite agar. Then, some time later, all the non-fermenting elements are killed off suddenly, and the broth contains only fermenting elements.

This new fermenting character tends to recede after its first selection, but if continuous growth on dulcite is undertaken for two to three months, the character remains permanent. A strain so trained and selected about nine months ago gave on plating out within the last few days pure plates of fermenting colonies.

Thus apparently two years' growth on lactose selects out a strain acting similarly to a dulcite strain selected in about a week. How long will a pure permanent lactose strain require for its selection?

Arabinose.

B. typhosus does not ferment arabinose on neutral red arabinose agar plates and ferments arabinose peptone water very slowly and irregularly. After three months'

*A paper read in the Section of Bacteriology at the annual meeting of the British Medical Association, London, July 29th, 1910.
† Penfold (1910), *Journ. of Path. and Bact.* vol. xiv., p. 406.

training on arabinose peptone water, I have succeeded in getting this fermentation in arabinose broths to occur overnight. On plating out at this stage, the plates may consist entirely of pure fermenters. I have not yet tested this character for permanency. All the three above-mentioned varieties agglutinate with a typhoid serum readily.

Glycerine.

Glycerine provides an illustration of another type of variation. Normal *B. typhosus* ferments glycerine. All the recently isolated strains examined, I have found on plating on glycerine agar to be pure fermenters. Three old laboratory strains I examined have shown, however, mixed plates of fermenters and non-fermenters. Sub culture of each of these types has given rise to pure races of the respective varieties. After five subcultures on peptone water, these still retained their pure character. Probably this negative variation is due to the laboratory culture, and the loss occurs so slowly as not to show itself in the same red strain after so few as five subcultures.

It is rather remarkable that pure fermenting strains inoculated on glycerine peptone water take about three to four days to produce full acidity and eight months' training does not quicken this period. After one day the litmus is completely decolorized by the fermenting strains, but on agitation it regains its colour and only the faintest trace of acidity is seen.

I have not yet tested whether the non-fermenting strains can be readily retrained, but in glycerine litmus peptone water they do not show any signs of acidity after two or three weeks. Both strains give all the other fermentation and agglutination tests of *B. typhosus*. The agglutinability of the non-fermenting strain is, however, somewhat impaired.

Isodulcite.

R. Müller has drawn attention to papillae-formation by *B. typhosus* on isodulcite. This I have observed in all the strains I have examined. Subculture from these, gives rise to colonies no longer able to form these papillae, but growing much more luxuriantly on isodulcite-agar. I found that subculture of these new colonies on peptone water thirteen times, failed to restore the papillae-forming power in any of the four strains so tested, This is apparently a mutation. Growth of *B. typhosus* on isodulcite broth frequently does not produce acidity though it may do so as early as one week. By 1 to 3 subcultures at monthly intervals, all strains I have tested give acidity in forty-eight hours.

The above five variants of *B. typhosus* agreed with the normal type in all their other fermentation and general properties, that is, the fermentation variations seemed to arise without any concomitant qualitative variations in respect of other fermentation and general characters.

Unsuccessful Variations.

I have grown *B. typhosus* (12 strains) in peptone water, containing formates, for about eight months, in order to get a gas-forming strain, but so far without results. Adonite, erythrite, saccharose, amygdalin, and salicin have all failed to select out special strains, though they were used for about nine months in each case.

Do the above-described variations undermine the value of sugar tests? I think not. They show, however, their limitations—namely, that laboratory culture can vary them. Short laboratory culture on particular carbohydrates will change the type, and evidently, in the case of glycerine, subculture on ordinary nutrient agar will do it after a long period. Cultures fresh from the blood or excretions of typhoid patients, however, show an almost absolute conformity to type in respect of fermentation characters, whereas the agglutination tests, when applied to freshly-isolated strains, not infrequently break down. It seems to me, therefore, that, in the recognition of these organisms, fresh from the body, the fermentation characters take a pre-eminent position.

In conclusion, I should like to put in a plea for the value of the fermentation tests in elucidating the laws of bacterial variation. They are easily applied, and if once understood would probably explain many of the most difficult problems in connexion with virulence and other properties of micro-organisms.

A CASE OF DIAPHRAGMATIC HERNIA IN AN ADULT.

BY

ERNEST RINGROSE, M.D.Durh., L.R.C.P., M.R.C.S.,

HONORARY SURGEON, NEWARK HOSPITAL.

Many cases of congenital deficiency in the diaphragm, chiefly left-sided, in infants have been collected both in this country and abroad, but the instances of the subjects having lived to adult life are extremely rare, and therefore I feel that no apology is required for recording this case.

M. L., aged 26 years, married three years, no children. She was a seven months child, had acute rheumatism thirteen years ago, was always highly neurotic, was a school teacher before marriage, and had been passed as sound by the medical examiner. She never suffered from digestive troubles. She was always very thin and was in the habit of lacing rather tightly.

In August, 1909, she was examined for uterine and bladder trouble and found to have marked anteflexion; nothing abnormal was found on palpation of the abdomen.

The patient became pregnant in November.

In March, 1910, she said she had not felt so well for years as she had during her early months of pregnancy.

On May 31st, 1910, she complained of feeling sick, and had "dragging" pains in her abdomen and back; at 3 p.m. she vomited.

On June 1st she was seen by me; her face was very flushed, the respirations 44; pulse 144, regular, low tension; temperature 100.4°. The heart's apex beat was in the fifth space, a little internal to the nipple line; the first and second sounds were normal. The percussion note over the front of the left side of the thorax was dull up to the second rib; above that it was hyper-resonant. The breath sounds were weak except at the third space, where they were bronchial. On the left side at the back there was dullness on percussion, weak breath sounds and diminished vocal fremitus up to the angle of the scapula; above that the percussion note was clear and the breath sounds bronchial; no adventitious sounds were audible anywhere over the left side of the thorax. There was considerable pain at the left costal margin. The patient was constantly eructating about half an ounce of clear yellowish fluid; the bowels acted well. The abdomen was occupied by the pregnant uterus of about seven months.

June 2nd. The patient had a restless night; the pain went away, but the eructations continued, the left back was quite dull on percussion, the breath sounds absent, and the heart's apex beat was in the epigastrium towards the right; aspiration was decided upon, but about 6 p.m. the child was born without any labour pains or warning; the placenta came away normally, and there was very little haemorrhage. During the kneading of the uterus a large mass was felt in the left iliac and lumbar region; this was thought to be an ovarian cyst, but on examination per vaginam nothing could be made out, and the uterus was quite normal. The patient felt much more comfortable, so it was decided under the circumstances not to aspirate the thorax that night.

On June 3rd my colleague, Dr. Hine, saw the patient with me; the pulse was 144, the respirations 44, temperature 100°; the heart's apex beat was then found to be again in the fifth space, just to the left of the sternum; slight jaundice was noticed. The mass in the left side of the abdomen was freely movable and easily examined, and diagnosed as the spleen. The bowels acted well, the stool being like putty.

June 4th. The patient was markedly jaundiced, the liver edge was felt two fingerbreadths below the costal margin, the eructations continued, the fluid now being quite black; the left thorax remained the same, but the heart's apex beat was again to the right edge of the sternum. The thorax was aspirated in the fifth space at the posterior axillary border and 6 oz. of black fluid came away. The patient became cyanosed and the pulse very small and weak; it was decided not to proceed with the aspiration. The patient continued to vomit small quantities of black fluid throughout the night; she had intense pain on the left side by the costal margin for an hour before death, which took place the next day.

Post-mortem Examination—The autopsy was made twenty hours after death, at which Dr. Hine assisted me. The uterus was healthy and no larger than is natural after labour; the appendages were normal. The spleen was found five fingerbreadths below the costal margin and approaching the middle line; it was slightly enlarged. The stomach was enormously distended and partially filled with black fluid, about 3 quarts in all; the fundus was situated in the thorax, as far up as the second rib; the pylorus was in its usual position, there being an hourglass constriction where the portion of the stomach passed through the diaphragm, owing to a partial strangulation. In addition the whole stomach was rotated on its long axis; the great curvature was uppermost, the posterior surface being anterior and

covered near the pylorus by the pancreas, which thus became extremely taut. The contents of the fundus could be pressed slowly into the pyloric portion, and the least pressure caused a quantity of the fluid to pour out of the mouth. The stomach walls of the abdominal portion were intensely congested, both internally and externally, and there had been considerable haemorrhage into the lumen. The large omentum had passed partially through the hernia into the thorax. About one-quarter of the small intestines was in the thorax, and together with the fundus of the stomach and omentum had compressed the left lung against the vertebral bodies. The transverse colon was empty, but still passed horizontally across the abdomen a little below the level of the umbilicus.

The hernia was situated on the left side of the diaphragm, and admitted the whole hand; its edges were formed of distinct muscular bands, the free edge being smooth and rounded; the upper edge formed a well defined falciform border reaching from the middle arcuate

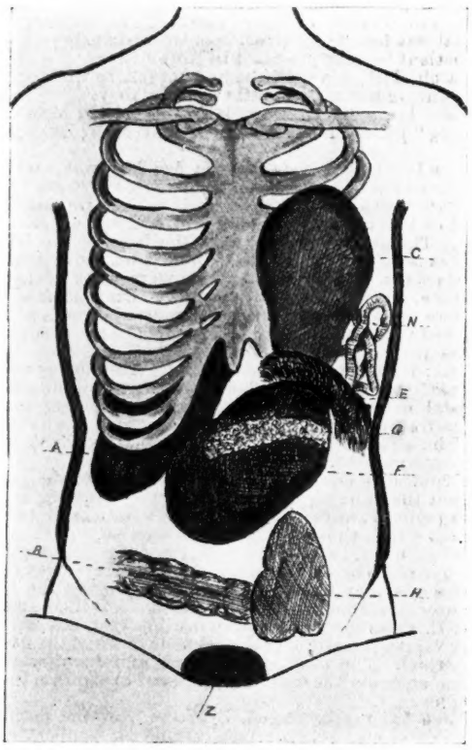

Diagram of the position of the abdominal viscera as found *post mortem*. A, Liver; B, transverse colon; C, distended fundus of the stomach; E, flabby muscular edge of opening in the diaphragm; F, distended posterior surface of portion of the stomach of a bluish-black colour; G, pancreas; H, spleen; N, portion of small intestines and omentum; Z, uterus.

fibres to the attachment of the diaphragm to the twelfth rib.

There was no evidence of any tear or laceration, in fact the condition strongly suggested a long duration, if not a congenital deficiency of the substance of the diaphragm between the middle arcuate fibres and the external arcuate band. There was no sac.

It was of interest to note that after reducing the hernia, that is, pulling back the fundus and intestines into the abdomen, the condition at once recurred, being highly suggestive that this migration into the thorax had been of some considerable standing.

Usually in these cases the hernia apparently takes place accidentally (these must be distinguished from traumatic diaphragmatic hernia), but the cause in this case can only be accounted for by the gradual distension and pressure produced by the pregnant uterus; there was no strain nor violence; the hernia had obviously occurred two days before the child was born prematurely, and the absence of labour pains negatives labour as the cause.

THE President of the United States is appointing special committees in the principal cities of the United States to assist in raising an endowment fund of £400,000 for the American Red Cross Society.

SEVENTY-EIGHTH ANNUAL MEETING
OF THE
British Medical Association.

Held in London on July 22nd, 23rd, 25th, 26th, 27th, 28th, and 29th.

PROCEEDINGS OF SECTIONS.

SECTION OF OTOLOGY.

EDWARD LAW, M.D., President.

PRESIDENT'S INTRODUCTORY REMARKS.

IN the course of his remarks Dr. Edward Law said: Without the least desire to unduly magnify the importance of our Section, we may unquestionably congratulate ourselves on forming once again a separate Section of Otology. The wisdom of our isolation from any other recognized Section is self-evident when we consider the marvellous growth of specialism, but I must own that I should like to see our programme varied with, and more liberal hospitality shown to, subjects taken from those closely connected but still unrecognized Sections—Rhinology and Pharyngology. It is impossible, in season or out of season, to too strongly or too frequently reiterate and emphasize the great importance, either from the scientific and clinical aspects or on sordid business grounds, of a more pronounced otological sphere of influence in the nose and throat. Rhinology, thanks to the energy, skill, and foresight of enthusiastic laryngological investigators, has made such rapid and wonderful strides that she is now almost ready and eager to stand alone, and the advisability of a distinct Section is occasionally mooted. Such a desirable or undesirable possibility is encouraged by the apathy of aurists in not introducing naso-pharyngeal subjects more frequently into their discussions, and so permitting another Section to exercise more or less complete control over a domain in which we should be coequal. Unless otologists show more interest and enthusiasm in the naso-pharynx, and so get down to the portal of entrance and bedrock of many aural affections, it is probable that rhinology will assume the rôle of the "predominant partner" in the study and treatment of diseases of the throat, nose, and ear. This prognostication may not be verified, but it should incite otological sections to devote more time and attention to prophylaxis, and to the source of origin of a large majority of cases of deafness and middle-ear suppurations. It is advisable for us, as well as for the State and municipalities, to remember the good old adage, "Prevention is better than cure"; and I should like to draw the attention of the members of this Association, and particularly of this Section, to the very interesting and instructive report of Dr. James Kerr, the eminent and zealous Medical Officer (Education) of the London County Council. It is recorded therein that provision for the medical treatment of defects is for the first time accessible to every child; it shows the dire necessity of the compulsory medical examination of school children; it emphasizes the fact that childhood is often the only time for the preventive treatment of deafness and many other troubles in later life. It records an experiment in the treatment of aural cases, particularly suppurating ears, at their own homes; it points out that the congenitally word-deaf child is no longer to be classed as imbecile and neglected in education. The weighty facts revealed throughout this report demonstrate that our representatives in this hugh metropolis are undertaking social work which a few years ago would have been looked upon as impracticable or Utopian, and which, *inter alia*, must have a most salutary and far-reaching influence on the prevention, early recognition, and treatment of aural affections.

This morning is, perhaps, not an opportune moment to touch upon some controversial topics which at the present time are exercising the minds of many of our members—I allude to whether the examination and treatment just referred to should be carried out at the child's home, or

undertaken at the hospitals, or in school clinics, and by whom such measures, whether operative or otherwise, should be carried out—but I do hope that every member present to-day will agree with me that these special duties should only be undertaken or supervised by specially trained members of our profession (not necessarily specialists) who are quite suitably remunerated for their valuable services to the community, regardless of the economic cost, which is after all, in the long run, a sound investment for the long-suffering ratepayer. This report also states that the interesting experiment of a tuberculosis school is to be tried, and gives a careful analysis of 500 cases of deafness by a highly esteemed member of this Section, Mr. Macleod Yearsley; but neither in the report, nor in Mr. Yearsley's analysis, is any mention made of "aural tuberculosis in children." This easily explainable omission justifies, if exoneration were necessary, the action of your officers in choosing Aural Tuberculosis in Children as a fit and proper subject for one of our discussions. Having got over the difficulty of selecting the subject there was not the slightest difficulty in selecting the man to open it. Dr. Milligan opens this discussion alone, at the unanimous wish of your officers, and no words of mine can convey a greater or more well-deserved compliment. The title of the discussion on the Diagnosis and Treatment of Infective Labyrinthitis was only determined after much deliberation. It embraces some of the amazing and very ingenious work of that great labyrinthine authority, Dr. Bárány, and the well-known labours of Mr. West, who have kindly consented to introduce this intricate subject from separate standpoints.

DISCUSSION ON THE DIAGNOSIS AND TREATMENT OF INFECTIVE LABYRINTHITIS.

I.—Privat-Dozent Dr. Robert Bárány,
Vienna.

I.—Diagnosis.

Suppurative middle-ear disease may cause total deafness without an infection of the labyrinth, but total destruction of the vestibular apparatus as a result of middle-ear suppuration can be produced only by a suppurative process in the labyrinth itself. Therefore diagnosis of infective labyrinthitis depends mostly upon the findings in regard to the vestibular apparatus.

The diagnosis of vestibular conditions depends primarily upon the vestibular nystagmus. Nystagmus is the exact measurement of the degree of response to any irritation of the vestibular apparatus. The vestibular nystagmus consists of two movements, a slow and a quick one. Experimentally, it can be produced in all forms and directions. The spontaneous nystagmus with which we have to deal in labyrinth diseases is a combination of horizontal and rotatory nystagmus. The vestibular nystagmus is accompanied by a number of partially subjective, partially objective symptoms: (1) Seeming movements of the surrounding objects; (2) seeming movement of the own body; (3) real movements of the body; (4) nausea and vomiting; (5) sensation of blackness before the eyes, etc. To go into detail regarding the variation of these symptoms in different patients would go beyond the scope of this paper.

The different conditions of the labyrinth which we can detect by investigation, mainly of the vestibular apparatus, are:

I. Normal vestibular apparatus (no labyrinth suppuration).
II. Acute destruction of the labyrinth.
III. Subacute destruction of the labyrinth.
IV. Latent labyrinth destruction.
V. Labyrinth fistula with intact membranous labyrinth.
VI. Labyrinth fistula with slight impairment of function.
VII. Labyrinth fistula with marked impairment of function.
VIII. Serous labyrinthitis.
IX. Vestibular movements of the eyes by compression and aspiration without fistula.
X. Labyrinth empyema and cerebellar abscess (Type A).
XI. Labyrinth empyema and cerebellar abscess (Type B).
XII. Labyrinth normal, cerebellar abscess.

In our investigation we have to consider the following points:

1. Spontaneous nystagmus.
2. Spontaneous nystagmus behind the opaque spectacles (Bárány).
3. Attacks of nystagmus, produced by rapid head movements (Bárány).
4. Caloric reaction (Bárány).
5. Turning reaction with use of opaque spectacles (Bárány).
6. Galvanic reaction.
7. Fistula symptom.
8. Disturbances of equilibrium—
   (*a*) Spontaneous.
   (*b*) Experimentally produced (Bárány).
9. Hearing.
10. Dizziness.
11. Nausea and vomiting.
12. Position in bed.
13. Ringing in the ears.

The following paragraphs contain the results of the investigation in the above-mentioned conditions.

I.—*Normal Vestibular Apparatus (no Labyrinth Suppuration).*

1. Spontaneous nystagmus is absent, or there is a small rotatory and horizontal (+ R) nystagmus to the right on maximal turning of the eyes to the right, together with the same to the left in looking to the extreme left (L. +).

2. Behind opaque spectacles there is an absence of spontaneous nystagmus in looking straight to the front.

3. Absence of nystagmus during quick motions of the head. (In smokers there are sometimes observed slight attacks)

4. Caloric reaction: Right ear, head in erect position, water 25° C. produces L. +; right ear, head erect, water 48° C. produces + R.; during slight narcosis cold water syringed into the right ear produces a deviation of the eyes to the right, and hot water a deviation to the left. In deep narcosis there is no movement of the eyes produced by hot or cold water syringed into the ear.

5. Turning nystagmus behind opaque spectacles: Ten turns to the right, head erect, produce L. ⟵ 42″; ten turns to the left ⟶ R. 42″ (approximately) (minimum 5″, maximum 2′).

6. Galvanic nystagmus: Cathode in right ear, anode in right hand ⟶ R.; anode in right ear, cathode in right hand, L. ⟵ 5 to 15 milliampères.

7. Fistula symptom is absent.

8. Disturbances of equilibrium—

   (*a*) Spontaneous are absent. In neurasthenics there may be a slight disturbance of equilibrium of non-vestibular character.
   (*b*) During experimentally produced nystagmus (after rotation to the right) the patient falls to the left if the head is erect. With the head turned to the right, he falls to the front. With head turned to the left, he falls backward.

9. Hearing normal, hard hearing or deaf.

10. Dizziness absent. (Exception see 3.)

11. Sickness and vomiting absent; during experimentally-produced nystagmus it is often present, especially in neurasthenics and in cases of traumatic neurosis.

12. Position in bed without significance.

13. Ringing in the ears may be present or absent.

II.—*Acute Destruction of Right Labyrinth (of Two Days' Duration).*

1. Spontaneous nystagmus: + L. pronounced when the patient looks in any direction.

2. Spontaneous nystagmus behind opaque glasses on looking forward ⟶ L.

3. Attacks of nystagmus during quick motions of the head. The spontaneous nystagmus is increased.

4. Caloric reaction ("Blickfixator") R. negative (cold and hot)—that is, the syringing does not change the spontaneous nystagmus). Left ear, syringed with cold water, produces a lessening of the spontaneous nystagmus L, or produces a nystagmus R.

5, 6, 7. Negative.

8. Disturbances of equilibrium. With head erect, the patient falls spontaneously to the right. On turning the head to the right, the patient falls backward. On turning the head to the left, the patient falls forward.

9. Hearing: Totally deaf on right side (with my noise apparatus).

10. Dizziness: The surroundings seem to turn to the left. The patient has the sensation as though his own body was turning to the left.

11. Sickness, vomiting present.

12. Position in bed: Lies on the sound side.
13. Ringing in the ears may or may not be present.

III.—*Subacute Destruction of Right Labyrinth (of Eight Days' Duration).*

1. Spontaneous nystagmus to the left lessened (to the right often moderately strong, purely horizontal). After a labyrinth operation the disappearance of the nystagmus is quicker than without the operation.
2. Spontaneous nystagmus behind opaque glasses; a more moderate nystagmus to the left, even when without glasses there is no nystagmus to be seen in looking to the front.
3. Negative.
4. Caloric reaction: Right, negative. Left, a weakened caloric nystagmus (that is, —> R., but smaller than in II).
5. Turning reaction behind opaque glasses: 10 R. head erect, —> L. 28"; 10 L. head erect, —> R. 14".
6. Galvanic nystagmus is not reliable; there is often a reaction from the diseased ear, and often none. The reaction from the sound side is plain.
7. Negative.
8. Disturbance of equilibrium weak or absent.
9. Same as II.
10. Dizziness slight; the surroundings no longer appear to the patient to move, nor does his own body seem to turn. This is often not the case with neurasthenics.
11. Negative.
12. Position in bed normal.
13. Ringing in the ear, same as in II.

IV.—*Latent Labyrinth Destruction, Right (after many months).*

1. Spontaneous nystagmus — nystagmus R. and L. slight or none at all.
2. Spontaneous nystagmus behind the opaque glasses generally absent, sometimes present of minimal grade.
3. Negative.
4. Caloric reaction: R. negative; L. markedly weakened, in a few cases absent.
5. Turning reaction: Ten times turning to the right with head erect, 20". Ten times turning to the left, 16". When the nystagmus to the diseased side lasts longer than 25" there is certainly no disturbance present.
6. Galvanic nystagmus from the diseased side may be either positive or negative.
7. 8, 9, 10, 11. Negative.
12. Normal.
13. Same as in II.

V.—*Labyrinth Fistula on Right Side, with Intact Membranous Labyrinth.*

1. Spontaneous nystagmus changes may be absent.
2. Spontaneous nystagmus behind opaque glasses changes.
3. Attacks of nystagmus by quick movements of the head. By throwing the head backward and to the diseased side generally a rotary nystagmus is produced to the diseased side, by throwing the head to the sound side and forward there is often a rotatory nystagmus to the sound side.
4. Caloric reaction: Both sides normal.
5. Turning reaction: Normal.
6. Galvanic reaction: Both sides normal.
7. Fistula symptom: By compression —> R. strong, by aspiration, L. + weaker. (Semicircular canal fistula.) Sometimes by aspirating nystagmus + R. strong, and by compression a weaker nystagmus L +. (Fistula not in semicircular canal or particulars not yet known exactly.)
8. Disturbances of equilibrium according to the nystagmus.
9. Hearing may be nearly normal or may be destroyed.
10. Dizziness: (*a*) With movements of the head as in V. 3. (*b*) Severe attacks without apparent causes mostly accompanied by nystagmus to the diseased side, lasting as long as twenty-four hours.
11. Sickness and vomiting often accompany the dizziness.
12. Position in bed: Patient generally lies on the sound side because a bending forward or a turning to the diseased side bring attacks of dizziness.
13. Ringing in the ears presen or absent.

VI.—*Labyrinth Fistula (Right) with Slight Impairment of Function.*

(Coagulation of the endolymph or haemorrhage into the perilymphatic space?)
1. Spontaneous nystagmus as in V.
2. Nystagmus behind the opaque glasses as in V.
3. As in V.
4. Caloric reaction: Right much weakened or absent; left normal.
5. Turning reaction: Normal.
6. Galvanic nystagmus: Normal.
7. Fistula symptom as in V. It may, however, also occur in the opposite direction in cases of semicircular canal fistula as when the labyrinth was intact.
8. As in V.
9. Hearing bad with the character of a lesion of the internal ear together with a disturbance in the conducting apparatus, or there may be deafness.
10. Dizziness as in V.
11, 12, 13. As in V.

VII.—*Labyrinth Fistula (Right) with Marked Impairment of Function.*

1. Spontaneous nystagmus, generally to the sound side; seldom changes to other side, seldom is absent.
2. Nystagmus behind the opaque glasses generally to the sound side.
3. Nystagmus by head movements as in V.
4. Caloric nystagmus: Right absent.
5. Turning reaction as in destruction of the labyrinth (III).
6. Galvanic nystagmus as in V.
7. Fistula symptom: By compression larger slow movement to the left; by aspiration smaller slow movement to the right, or the whole may be reversed.
8. As in V.
9. As in V.; generally deaf.
10, 11, 12, 13. As in V.

VIII.—*Serous Labyrinthitis Right (No Destruction of Function, no Fistula).*

1. Spontaneous nystagmus to the right or left, changing.
2. Spontaneous nystagmus behind glasses, changing.
3. As in V.
4. Caloric reaction: Right, weak.
5. Turning test gives a reacting labyrinth, right.
6. Galvanic nystagmus, normal.
7. Fistula symptom: Absent.
8. Disturbances of equilibrium according to the nystagmus.
9. Testing the hearing with noise apparatus does not give a total deafness.
10. Dizziness present in both marked and slight attacks.
11. Sickness and vomiting present.
12. Position in bed, generally on the sound side, because turning to the diseased side causes dizziness.
13. As in V.

IX.—*Vestibular Movements of the Eyes by Compression and Aspiration without Fistula.*

1. Fistula symptoms weak—that is, by compression and aspiration—then follows only slow eye movements in the opposite direction.
2. Caloric reaction: Normal. It may be weaker or even absent.
3. Turning reaction: Normal.

For the remaining symptoms such cases may have all the evidences of a circumscribed labyrinth disease, as dizziness following quick movements of the head, heavy attacks of dizziness without apparent cause, a changing spontaneous nystagmus, and so forth. The diagnosis in this case would be either an abnormal mobility of the window membranes (chronic suppurative otitis media, luetic periostitis) or an abnormal irritability of the vestibular apparatus (disease of the inner ear, especially in traumatic cases).

There are cases, though seldom, of luetic labyrinthitis or without known cause, in which the caloric irritability in lessened or is absent; in these, compression and aspiration produce traces of nystagmus, or only small, slow eye movements.

X.—*Labyrinth Empyema and Cerebellar Abscess—Right (Type A).*

1. Spontaneous nystagmus R. + strong.
2. Spontaneous nystagmus behind glasses R ←.
3. Movements of the head often increase the spontaneous nystagmus.
4. Caloric reaction: Right negative.
5. Turning nystagmus (?).
6. Galvanic nystagmus (?).
7. Fistula symptom negative.
8. Disturbance of equilibrium; either (*a*), (*b*), or (*c*) possible.
   (*a*) Vestibular (head erect, falls to the left; head turned to the right, falls forward; head turned to the left, falling backwards).
   (*b*) Cerebellar (the falling is not dependent upon the direction of the nystagmus and is not influenced by the changes in position of the head).
   (*c*) The experimentally produced vestibular nystagmus from the left ear yields often a change in the disturbances of equilibrium in that the patient does not show the typical dependence of the direction of falling on the direction of the nystagmus, nor is the direction of falling typically changed by the changes in position of the head.
9. Hearing: Right deaf.
10. Dizziness present, in the later stages slight.
11. Sickness: Vomiting at first severe, later ceases; in fact there may be a lessened sensibility to vestibular disturbances so that a strong nystagmus coming from the left ear may not cause any dizziness or sickness.
12. Position in bed: On the diseased side.
13. Tinnitus present or absent.

In case these findings are present in a case of chronic suppurative middle ear disease, a diagnosis of empyema of the labyrinth (total destruction of the labyrinth) with cerebellar abscess may at once be made, as a spontaneous nystagmus to the diseased side can only be produced intracranially when the absence of caloric nystagmus has shown the presence of destruction of the labyrinth. Meningitis and cerebellar tumour may easily be ruled out of the diagnosis through the other symptoms.

XI.—*Empyema of the Labyrinth and Cerebellar Abscess—Right (Type B).*

1. Spontaneous nystagmus, ⟶ L.
2. Spontaneous nystagmus behind glasses, ⟶ L.
3, 4, 5, 6, 7. As in X. (Type A).
8. Disturbance of equilibrium: (*a*) Vestibular; (*b*) and (*c*) as in X (Type A).
9, 10, 11. As in X (Type A).
12. Position in bed: On the sound side.
13. As in X (Type A).

The diagnosis at first is acute diffuse labyrinth destruction. In case the nystagmus does not decrease in a few days (especially after a labyrinth operation), or in case it increases then, the diagnosis of an intracranial origin is sure. The further differential diagnosis is the same as in Type A.

XII.—*Right Labyrinth Normal; Right-sided Cerebellar Abscess.*

1. Spontaneous nystagmus, R. or L., or a strong nystagmus in both directions; often of abnormal form (intracranial) as, for instance, vertical or diagonal nystagmus, or rotatory in one direction, and horizontal in the other at the same time.
2. Spontaneous nystagmus behind glasses varied.
3. Movements of the head often produces attacks of nystagmus.
4. Caloric reaction: Right strong. The double-sided simultaneous syringing of the ears (Ruttin) often shows an overexcitability of the diseased side.
5. Turning test gives a normal reaction.
6. Galvanic nystagmus. A double-sided simultaneous application of the cathode shows a nystagmus to the diseased side, indicating an overexcitability of that side (Ruttin). The anode produces an opposite effect.
7. Fistula symptom negative.
8. Disturbances of equilibrium as in XI (Type A).
9. Hearing present; generally the findings are those of a lesio auris internae.
10. Dizziness as in XI (Type A).
11. Position in bed according to the nystagmus.
12. Sickness: Vomiting as in XI (Type A).
13. Tinnitus present or absent.

One would differentiate between these diseases and a circumscribed disease of the labyrinth. If one observed the nystagmus for more than twenty-four hours without its changing, it is surely of intracranial origin. It is also intracranial when abnormal forms of nystagmus are observed which are not possible in peripheric diseases. In the remaining cases the diagnosis can be only made from the other symptoms.

The following remarks may be of use in investigating the different conditions of the labyrinth:

A.—*Remarks concerning Points 1 to 13 of the Conditions dealt with.*

1. If you examine for spontaneous nystagmus, have the patient look at your finger, held about one metre from his eyes.
2. A simple method of making opaque glasses is to cover a pair of glasses with ordinary white paper. One examines the nystagmus behind the glasses by raising somewhat the upper lid of the eye and observing it under a bright head mirror light for a minute or two at least.
3. To examine the nystagmus caused by rapid head movements the observer places himself directly in front of the patient and observes one of the eyes, while the patient is directed to look alternately to the right and left. Then, without interrupting the observation of the eye, the head of the patient is brought in the desired position with a sudden quick jerk. The nystagmus by bending forward is examined by means of a mirror placed on the lap of the patient.
4. For the caloric test a slow irrigation is sufficient (you can use an irrigator, or a Politzer bag, with an attic cannula, or several syringes of water). In a case of dry perforation it is necessary to use a constant stream of air instead of water. In case of spontaneous nystagmus the "Blickfixator"—that is, ocular fixation apparatus*—which I have constructed is to be used. Make the patient look in a definite direction, and notice the strength of the spontaneous nystagmus; then judge whether by syringing this spontaneous nystagmus is altered or not.

The examination of the caloric reaction in light narcosis has to be done in all operative cases with doubtful caloric reaction after the radical operation. Even in cases of labyrinth fistula I have never seen the slightest injury caused by this examination.

5. For the examination of the turning nystagmus we make use of a turning chair with back, arm, and feet rests. A perpendicular iron rod is fastened to the back, extending well above the patient's head. It is important not to use a chair which is raised or lowered by rotation. It must have a simple rotary movement around the vertical axis. The turning should always be done with uniform velocity. The ten revolutions should take about twenty seconds. It is necessary to stop the movement suddenly—best by putting the observer's knee in the path of the knee of the patient. Measure the time by a stop-watch.
6. The galvanic test in the presence of spontaneous nystagmus generally gives a doubtful result, as the pain caused by galvanization renders it difficult for the patient to fix his eyes continuously on the same spot.
7. To examine the fistula symptom, let the patient look straight forward on your front, and use a head mirror to observe his eye with good light. It is necessary to have an olive, which, when placed in the ear, closes same air-tight. For different ears several sizes are necessary. If air escapes through the Eustachian tube, use the Valsalva during the test (Ruttin). The compression and aspiration is brought about by means of a Politzer bag connected to the olive by a rubber tube. One should not use too strong pressure or aspiration, nor make the test too frequently. One should never examine the eye movements caused by pressure upon the fistula during the operation unless one intends to perform the labyrinth operation at once. It is possible that an injury might be brought about by frequent examination, though I have never met with such a case. An examination, if carefully conducted, will not cause any injury, even if repeated three or four times over.
8. To examine the disturbance of equilibrium the patient has to be placed in the same position as for the Romberg test—that is, with closed eyes and feet together. The experimental falling is tested mostly by producing rotary

* To be procured from H. Reiner, IX Van Swietengasse 10. (Price 12 crowns.)

nystagmus through syringing with hot or cold water, or by turning with the head bent forward 90 degrees, and erecting the head after arrest of turning.

9. I have nothing to say about the usual methods of diagnosing a lesion of the cochlear apparatus. For the diagnosis of unilateral deafness the noise apparatus* which I have constructed is used with good results. The principle of this apparatus is to produce such a noise in the sound ear that this ear is quite excluded from hearing and that the diseased ear might be tested alone. If the diseased ear has comparatively good hearing this is lessened by the noise in the other ear. The worse the diseased ear hears the less it is influenced by the noise in the other ear.

10 and 11. Dizziness is the subjective side of vestibular irritation. It is important to keep in mind the enormous individual differences. One patient notices scarcely a trace of dizziness with the strongest nystagmus, another has strong dizziness where the vestibular eye movements can hardly be detected even with the utmost care.

12. The position in bed, due to dizziness, is caused by the presence of spontaneous nystagmus or by the nystagmus produced by rapid head movements. For example, if a patient has a spontaneous left rotary and horizontal nystagmus he lies on his left side, thus making his field of vision to the right, which reduces the nystagmus and dizziness to the minimum, whereas if he lies upon his back or right side the field of vision to the left induces the patient to look to the left, thereby increasing the nystagmus and sensation of dizziness. If we have to do with a case of nystagmus attacks due to head movements the patient will either lie upon his back or on the healthy side, since turning in the direction of the diseased side usually makes the attack more marked. Sometimes a patient will go about holding the head in a definite position, this being due—other causes excluded—to the fact that in any other position of the head attacks of nystagmus are elicited.

13. Roaring or ringing in the ear rarely accompanies the caloric and turning nystagmus, or the short nystagmus attacks produced by rapid head movements, but it is often present in the heavy spontaneous attacks of dizziness. In rare cases the tinnitus ceases during the attack.

B.—*Remarks concerning the Twelve Conditions dealt with.*

I.—The most important tests for determining a normal labyrinth are: (1) Absence of spontaneous nystagmus, except in extreme positions of the eyes; (2) absence of attacks of nystagmus produced by rapid head movements; (3) presence of the caloric reaction; (4) absence of fistula symptom. With these results any severe disease of the vestibular apparatus, and therefore any suppurative infection of the labyrinth, is excluded. A slight lesion, perhaps of serous character, might be present as spontaneous nystagmus, and also attacks of nystagmus due to head movements show remissions, and it is possible that the examination is made during this time. Also the presence of the caloric reaction does not exclude a slight lesion, since the physiological variations are not yet sufficiently known to determine when a caloric reaction is pathologically exaggerated or diminished. Quantitative methods of measuring the caloric reaction have been undertaken (Kiproff, Beck, Ruttin, Buys, Wojatschek, Brünings), but have not as yet given satisfactory results. The exact measuring of the turning nystagmus which I have performed gives such enormous physiological variations that the border between physiological and pathological behaviour, regarding the circumscript diseases, cannot be drawn.

II, III, IV.—The strong nystagmus to the sound side in acute labyrinth destruction is not to be considered due to irritation, but to the loss of function of the involved side. We must imagine that, when the vestibular end-organ is completely at rest, continual innervations pass from the vestibular ganglion, the Deiter's nucleus, and from here to the eye muscle nuclei and maintain a vestibular tonus of the eye muscles. If the vestibular ganglion by destruction of the labyrinth is damaged in its function, then the innervations from the sound side to Deiter's nucleus outweigh those from the diseased side, thus producing a nystagmus to the sound side. This spontaneous nystagmus together with the absence of the caloric reaction are the most important signs of the acute labyrinth destruction. The spontaneous nystagmus and the accompanying symptoms decrease from the moment of the destruction of the labyrinth by adaptation of the centres (subacute labyrinth destruction). This decrease is much more rapid after labyrinth operation. From this we assume that besides the loss of the normal stimuli there are pathological irritations, released from the diseased labyrinth, which hinder the quick adaptation of the centres. The fact that some time after labyrinth destruction the caloric reaction of the sound side is often diminished, and in rare cases even abolished, proves also the change of irritability in the centres. The latent state of the labyrinth destruction is characterized by the absence of the spontaneous nystagmus and of the caloric reaction.

V, VI, VII.—As the bony labyrinth wall is generally eroded slowly, we can understand that in the moment when the perforation produced from the cholesteatoma of the antrum or the chronic osteitis of the outer labyrinth wall is complete the membranous labyrinth is already protected against the infection by a leucocyte wall. We therefore observe fistula cases with intact function of the membranous labyrinth (V). If the suppuration continues the membranous labyrinth will be damaged. The slightest degree of this damage is in my opinion an inflammatory thickening of the endolymph, which leads to partial coagulation of the latter. When this coagulation has progressed to a certain extent the caloric reaction is lost (VI). The caloric reaction can only be normal if the endolymph is freely movable, as the physical force producing this reaction is minimal. When the endolymph is only thickened the caloric reaction will be impaired, as we see in animals with normally thick endolymph (Kubo). A slight impediment for the movement of the endolymph can abolish the caloric reaction. The turning reaction, however, and much more so the "fistula symptom," depend upon a stronger physical force, and therefore will be present where the caloric reaction is already gone (VI). If the inflammatory process continues, the end organ becomes involved, and with it the turning reaction and the "fistula symptom" will be impaired. The impairment of the fistula symptom is shown by the decrease in the nystagmus on aspiration and compression, and finally by the complete loss of the quick component of the nystagmus (VII).

VIII.—The diagnosis of the serous labyrinthitis presents the most difficulties. As yet we have no proof that a non-infective serous labyrinthitis really exists, or that a mild infection of the labyrinth can remain serous. In cases of labyrinth disease in which the function of the labyrinth is never quite abolished, or where after a temporary abolishment a portion of the function returns, we assume a serous labyrinthitis. But it is possible also that a circumscript purulent disease of the labyrinth can heal with a remnant of function, as is proved by cases of traumatic injury of the semicircular canal during mastoid operation. In cases in which acute labyrinth symptoms occur with absence of fistula the diagnosis of serous labyrinthitis seems probable. But it is not yet proven that a fistula is necessary for a purulent infection of the labyrinth. From the above remarks it can be seen that the diagnosis of serous labyrinthitis is more a matter of opinion than of real knowledge.

X, XI, XII.—It is a clinical fact that generally a cerebellar abscess is combined with labyrinth suppuration. A discussion of the reasons for this fact is not in the scope of the present paper. The diagnosis of a cerebellar abscess is in part made from the presence of intracranial nystagmus. Every spontaneous nystagmus of a typical form has to be considered as of intracranial origin. Any strong vestibular nystagmus which persists without change for more than twenty-four hours, or increases within this time, does not belong to the peripheric labyrinth, but is central; an attack of nystagmus—as in a circumscript disease of the labyrinth—will not last this length of time without change, and in cases of acute destruction of the labyrinth a decrease of nystagmus is appreciable within this time. If a patient presents spontaneous nystagmus towards the diseased side, and absence of caloric reaction and "fistula symptom," the diagnosis of central nystagmus can be made at once, as it is impossible that a destroyed labyrinth can produce nystagmus to its side (Neumann and Bárány).

* To be procured from H. Reiner, Vienna, IX Van Swie'engasse 10. Price 30 crowns.)

Two other symptoms, dependent upon the vestibule, are important in the diagnosis of cerebellar abscess: (*a*) The disorders of equilibrium; (*b*) disorders of the pointing movements of the extremities.

(*a*) If a normal man has rotatory vestibular nystagmus to the right side, he falls, with closed eyes and feet together, to the left. If the head is turned 90 degrees to the right, he falls forward; if 90 degrees to the left, backward (Bárány). This falling is due to a slow tonic contraction of the muscles of the side to which the patient falls. In cases of cerebellar lesion we see in Romberg's test a falling which reminds us accurately of this vestibular falling. But there is a very important difference. The falling in these cases is not in connexion with a certain form of nystagmus, and is not influenced by the position of the head (Bárány). If in such a case we produce an experimental nystagmus, the falling which accompanies the nystagmus does not follow the rules above given for the normal.

(*b*) If we let a normal individual with closed eyes touch with his forefinger or big toe the outstretched finger of the examiner held before him, and then withdraw his finger or toe and point to the examiner's finger again, he will, after a few trials, point correctly. In cases of fresh cerebellar lesion (abscess, trauma) I have seen the patient point constantly to the same side of the examiner's finger with the hand and leg of the diseased side, while the sound side pointed correctly.

If a normal individual is turned quickly ten times to the right with the head erect, on stopping he will point with all four extremities to the right of the finger of the examiner. In cases of healed cerebellar abscess I have seen that, after turning, the extremities of the diseased side did not point to the side of the turning, but pointed absolutely correctly, while the extremities of the sound side made the usual error. The explanations of these phenomena are discussed in my paper read before the Neurological Section of the British Medical Association.

Indications for the Labyrinth Operation in Middle-ear Suppurations and in Complications from the Side of the Labyrinth.

Condition.	When there are Labyrinth Symptoms only.	Presence of a Complication of the Middle-ear Suppuration apart from the Labyrinth Suppuration.	A Simple Anthrotomy is Indicated.	Radical Operation is Indicated.	The Total Labyrinth Operation (Jansen-Neumann) is Indicated.	The Small Labyrinth Operation (Hinsberg) is Indicated.	The Total Labyrinth Operation and the Radical are Indicated to be made at the Same Sitting.	The Smaller Labyrinth Operation and Radical are Indicated at the Same Time.
II	One may wait eight days	Operate at once	—	—	—	—	+ In acute and chronic suppurations	—
III	If there is no particular reason for waiting, one may operate at once	Operate at once	—	—	—	—	+ In acute and chronic suppurations	—
IV	Ditto	Operate at once	—	—	—	—	In acute and chronic suppurations	—
V	Cautery of the cavum tympanum. Extraction of polyps. Hammer and incus extraction. Only in exceptional cases no operation	Operate at once	+ In acute middle ear suppuration	+ With exception of those cases of deafness on the other side, here, if possible, a conservative treatment. In chronic suppuration with good hearing and intact drum a radical operation with retained drum and small bones is indicated	+ When after a radical operation a diffuse labyrinthitis is set up, especially in cases of fistula in the membrane of the oval window	+ When after a radical operation there is deafness and severe dizziness and the patient wishes to get rid of the dizziness	+ With symptoms of cerebellar abscess or meningitis	+ If deafness and severe dizziness are present and the patient wishes to get rid of the dizziness.
VI	Ditto	Operate at once	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto
VII	Ditto	Operate at once	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto
VIII	No labyrinth operation except when in the course of the observation of the case there is a complete destruction of function (danger of meningitis small)	Operate at once	Ditto	Ditto	—	Ditto	Ditto	Ditto
Traumatic fistula of the semicircular canals	No labyrinth operation except on destruction of function (serous labyrinthitis). (Danger of meningitis small)	—	—	—	+ Immediate operation on appearance of symptoms of meningitis or cerebellar abscess	—	+ When symptoms of meningitis or cerebellar abscess appear after an anthrotomy	—
Traumatic fistula of the oval window	In case of severe labyrinth symptoms operate on labyrinth at once. (Danger of meningitis great)	—	—	—	+ With severe labyrinth symptoms even before entire destruction of function	—	—	—

II.—INDICATIONS FOR OPERATION.

The amount of pus which the labyrinth may contain is very small. Still the labyrinth suppuration is very dangerous, because the pus cannot escape, and any rise of pressure in the labyrinth makes it possible for the pus to pass to the meninges. The great dangers incident to this disease justify our operative procedures. If we wish to give exact indications for this operation, we must first know the mortality. Of more than a hundred labyrinth operations performed in the last few years in our clinic two deaths might be attributed to the operation itself. This makes a mortality of not quite 2 per cent. But even at that we are not sure that really the operation was the cause of the death. It is possible that the fatal meningitis would have come also without operation. In the remaining cases in which death occurred definite signs of meningitis were present before the operation. With these statistics we are bound to operate on the labyrinth in every case where the diagnosis of labyrinth destruction can be made. Concerning the labyrinth destruction, you can only discuss the time of operation. If we have to deal with an acute labyrinthitis without any complication (that is, no fever, no headache, no great amount of suppuration, no tenderness on the mastoid, and so on), we can wait eight to ten days to allow the pus to become encapsulated. In the latent labyrinthitis we have no reason to wait. In the fistula cases our procedure is difficult to define; we have to differentiate various conditions.

A. Fistula in the semicircular canal.

Hearing preserved.		Deaf.	
No dizziness.	Much dizziness.	No dizziness.	Much dizziness.
No labyrinth operation.	Eventually labyrinth operation.	No labyrinth operation.	Labyrinth operation.

B. Fistula in the oval window.

Hearing preserved.		Deaf.	
No dizziness.	Much dizziness.	No dizziness.	Much dizziness.
No labyrinth operation.	Eventually labyrinth operation.	No labyrinth operation.	Labyrinth operation.

First we must consider how cases with preserved hearing and much dizziness behave after the simple radical operation. There are some possibilities. It may be that after the operation no labyrinth symptoms occur, that the fistula heals, the dizziness disappears, the hearing is preserved. This is, no doubt, the most fortunate result. But it is not the usual result. Very often after radical operation acute labyrinth symptoms occur, and the hearing is lost for a short time or permanently. Dizziness can also permanently disappear after a few days of exacerbation, but may also remain even when the hearing is lost. We have also cases where, notwithstanding a long treatment, the fistula does not heal. It is necessary to state that the fistula in the semicircular canal is not nearly as dangerous as in the oval window. Therefore, if a case of fistula in the oval window develops labyrinth symptoms we should immediately operate, whereas we can wait with a case of fistula in the semicircular canal. Concerning dizziness, we know that some cases suffer greatly with the slightest degree of vertigo, and are incapable of working. In such cases we will naturally favour operating sooner than in a case which does not suffer from vertigo.

II.—SYDNEY SCOTT, M.S.Lond., F.R.C.S.,
Assistant Aural Surgeon, St. Bartholomew's Hospital.

DEMONSTRATION.

DURING the course of Dr. Bárány's paper Mr. Sydney Scott gave a cinematic demonstration of nystagmus. The cinematographs were taken with a photographic apparatus provided by Kinora Limited, fitted for high-speed exposures and driven by an electromotor. Mercury vapour lamps had been found necessary to give sufficient illumination by actinic rays. A specially arranged mask and frame had been used to support the head, and a cross thread had been fastened to the mask in front of the eyeball to serve as a means of obtaining accurate measurements of the movements observed. Photographs had been taken in this way of (1) spontaneous nystagmus, (2) nystagmus produced in a normal subject by rotation about a vertical axis with the head erect, (3) nystagmus provoked by meatal compression in a case of fistula of the external semicircular canal. It was hoped that further details would some time be given by Mr. Abrahams, who had undertaken to study the angular velocity of nystagmus by means of these photographs. As it seemed possible that chief interest would be taken in the cinematographs of the movements in the case of fistula of the external semicircular canal, a detailed account of it was recorded, and is here reproduced.

History.—Annie B., aged 17, was first seen October 29th, 1909. She had bilateral otitis media chronica, dating from infancy. The tympanic membranes were perforated posteriorly close to the tympanic ring, and foul muco-pus was seen in the meatus. On the right side there were polypoid granulations which were removed, but without material diminution of the discharge from the ear. The discharge from the left ear greatly lessened under routine syringing, etc.

When at her best, the patient could hear Politzer's acoumeter at about 10 cm. from either ear. Rinne's test (a Bezold fork) was negative and Schwabach was positive. There was no paracusis Willisii. The highestt one audible on Edelmann-Galton whistle was 22,000 on the right side and 44,000 on left. The lowest tone at maximum amplitude audible was 36 on the left and 45 on the right side (Bezold-Edelmann forks). Owing to the persistent formation of granulations in the right tympanum in spite of continuous attention, the patient had to be admitted to the hospital and was operated upon February 10th, 1910. The radical mastoid operation was performed on the right ear. The membrane and remains of malleus were removed. The stapes was found to be in its place. There was no fistula of the external canal, although the eminence was flatter than usual. A skin graft was applied to the surface of the bone.

On April 1st, after the patient had left the hospital, she was seen in the out-patient department, and it was found that the whole of the cavity was well healed except over an area in the attic and aditus above the facial nerve, where there was a small mass of granulations. When the ear was syringed with water at body temperature, the patient forcibly turned the head to the left, and nystagmic movements were produced. When the eyes were attentively fixed towards the right, the force of syringing produced an intial movement horizontally to the left, followed immediately by jerking movements which were sometimes faster to the left than to the right and sometimes faster to the right than to the left, and sometimes the eyeballs moved to right and left to and fro at equal rate. When the patient looked attentively straight ahead, the eye-movements produced were the same as when the patient looked to the right. When the patient directed her eyes voluntarily to the left, forcible syringing caused rotatory nystagmus with the rapid jerk to the right. (A distinct horizontal movement could not be detected apart from the rotatory motion when the eyes were directed to the extreme left.) *The same phenomena could be elicited by touching a small area above the facial nerve with the end of a fine probe*, but no movements or sensations were set up by touching any other part of the cavity. Strong intrameatal compression (with a Politzer's bag connected with the ear by a rubber tube, which was fitted tightly into the meatus) produced strong horizontal nystagmus, when the patient was looking straight ahead. It was not possible to say that the rate of the alternating movements was faster in one direction than in the other. Once a weak compression produced the sensation as if the stool on which the patient was seated was suddenly pushed directly forwards. It was not possible to reproduce this sensation, in spite of several attempts to do so. The sensations invariably produced on other occasions were that the room was rotating towards the patient's right with a slight undulation up and down, and secondly that the patient herself was also turning towards the right as in waltzing. The forced movements of the head and body, however, were always in the opposite direction, that is, the patient turned her head towards the left around a vertical axis, when the region of the external semicircular canal was touched; in other words, there was contradeviation of the head and eyes, to each stimulus applied to the area of the canal. These observations were repeated again and again to make certain that the observations which were taken down at the time were in accordance with fact. On one occasion when the probe came in contact with the area on the inner wall of the cavity, the patient made such a sudden forced and involuntary movement that the probe unintentionally entered more deep than usual into the granulations. The nystagmus which accompanied this stimulus lasted thirty seconds after the probe was withdrawn, and it was feared that some haemorrhage must be going on into the labyrinth. The sensation of giddiness out-lasted the persistence of the nystagmus on this occasion. The area was swabbed with a 5 per cent. mixture of izal, which produced a burning sensation for a few minutes but did not cause the return of giddiness. The cavity was packed with gauze. During the process of packing, nystagmus was again produced at each act of pressure.

In about ten days the granulations had disappeared, and a little later no pressure reactions could be obtained, and there was no spontaneous giddiness or nystagmus.

A few weeks afterwards the patient was examined on the rotation chair, and by the caloric tests, and showed signs of normal reactions for the superior and external semicircular canals.

Subsequently Mr. Scott said that he could attest the accuracy of Dr. Bárány's descriptions from his own researches in labyrinthology. He laid stress upon the necessity of thorough investigations, and regarded the idiosyncrasy shown by patients in their reactions during excitations of the labyrinth as an important practical feature in examining patients for the first time. Nystagmus was not the only sign to rely upon. Forced movements were sometimes more easily evoked, and were often unaccompanied by unpleasant sensations. He agreed with Dr. Bárány's observations on galvanic stimulation, and he had also met with examples of positive (normal) reactions as regards elicited nystagmus, even when there was necrosis of the semicircular canals. The value of the test was restricted to cases giving unilateral negative reactions; galvanism was then a valuable corroborative test. He had practically discarded the use of currents of such strength as are found necessary to provoke nystagmus (8 to 18 ma), and paid more attention to artificial Rombergism, which it was possible to produce by weak and painless currents of (usually) from 2 to 5 ma. He had mentioned this in the Arris and Gale Lecture (Royal College of Surgeons, March, 1910). He suggested that the anomalies of galvanic stimulation might be due to anatomical variations in the distribution of the vestibular ganglia cells, which were not necessarily destroyed by infections in the labyrinth, but would be cut off by auditory nerve tumours or gross lesions in the internal meatus. He had met with 12 examples of "fistula (compression) sign" in cases of fistula of the external semicircular canal or fenestra ovalis. As regards so-called serous labyrinthitis, the diagnosis of which was often difficult, he suggested that possibly in some the symptoms were really due to oedema or inflammation of the ampullary nerves to the superior and external canals. In particular he had met with the symptoms and signs described by Dr. Bárány in some patients in whom vertigo was associated with facial paralysis, and in whom the facial nerve had been found exposed by middle-ear disease. In some of the cases he had obtained negative caloric and rotation reactions on the affected side before and after the operation on the antrum and tympanum, the defect in hearing being of the *middle-ear* type. It was important to have a reliable means of distinguishing this variety, for an operation on the labyrinth when this complex prevailed was to be condemned, whereas in cases of virulent infection of the internal ear delay in opening the vestibule might mean certain death from consecutive lepto-meningitis.

III.—C. Ernest West, F.R.C.S.,

Aural Surgeon, St. Bartholomew's Hospital.

The diagnosis of infective conditions of the labyrinth has already been treated in the paper by Dr. Bárány which we have just had the privilege of hearing. In introducing the discussion of the treatment of these conditions, I shall therefore assume throughout that questions of diagnosis have been settled.

Infections of the labyrinth fall into two main classes, the pyogenic and the non-pyogenic. We have much fuller knowledge of the former as regards its pathology, and it is especially with the treatment of this class that I have felt called upon to deal; for the sake of completeness, however, I hope, if the limits of time will allow, to briefly mention some few points with regard to the more obscure and in some cases debatable non-pyogenic conditions.

Infective labyrinthitis due to pyogenic organisms may be either diffuse, involving the whole of the membranous labyrinth in functional destruction, or strictly localized, affecting a limited portion of the interior of the labyrinth—for example, a short section of the external semicircular canal—or being restricted entirely to the bony wall of the canal. Diffuse infective labyrinthitis may be either acute or chronic. Chronic cases may have passed through the acute stage, diffuse from the first, or may be the final result of a slow infective process starting from a local focus—a condition especially characteristic of tuberculous labyrinthitis, but not limited to this form of infection. Necrosis of the labyrinthine capsule may take place both in acute and in chronic infective labyrinthitis; it brings its own special difficulties in treatment.

In *acute diffuse labyrinthitis* of pyogenic origin the indications for treatment may be summarized as threefold: the relief of the patient's violent illness—he is in great pain, distress, and headache; the cutting short of the great danger of meningitis and cerebellar abscess to which he is exposed (more rarely of acute blood infection); and the avoidance of a residual chronic infective labyrinthitis, which is an almost inevitable sequela if he survive without treatment. I have intentionally emphasized the occurrence of cerebellar abscess, and have omitted any mention of temporo sphenoidal abscess. In cases of extension of infection from the labyrinth to the brain the route seems to be in almost every case through the posterior semicircular canal or internal auditory meatus to the posterior surface of the petrous, and so to the cerebellum. Probably 50 per cent. at least of all cerebellar abscesses are consequent on infective labyrinthitis. On the other hand, I have not found it possible to trace any connexion between infective labyrinthitis and temporo-sphenoidal abscess. Caries extending to the middle cranial fossa seems to take the path through the tegmen, and so to the temporo-sphenoidal lobe; only in tuberculous labyrinthitis, and in necrosis of the labyrinthine capsule, do I remember seeing the route through the labyrinth to the middle cranial fossa followed. Meningitis due to labyrinthitis includes at least the great majority of all cases of otitic meningitis; infection spreads along the nerves, either through the channels of the modiolus of the cochlea or through the foveae on the antero internal wall of the vestibule to the prolongation of the subarachnoid space which passes out along the seventh and eighth nerves in the internal auditory meatus. The problem of treatment resolves itself into the effective and safe opening and drainage of the infected labyrinth. I may be allowed to remind you that in these cases the labyrinth is already destroyed as a functional organ, both in its auditory and in its equilibrating sections, and that no further loss of function results from operative procedures under these conditions. Clinical experience has shown that the criterion of effective drainage is satisfied by the free opening of the vestibule, and that there is no necessity for any wide interference with the cochlea, nor with the length of the semicircular canals. The criterion of safety is concerned with two structures—the subarachnoid space of the internal auditory meatus, infection of which threatens life, and the facial nerve. The detailed treatment of the operative procedures under various circumstances will be returned to at a later stage.

By operation in acute diffuse labyrinthitis very striking relief is immediately obtained from pain, headache, and fever, provided the infection is still limited to the interior of the labyrinth, and has not reached the meninges or brain; the risks of further spread of infection are greatly minimized or entirely arrested; and the ear may be rendered dry and free from further dangers at the one primary operation.

In considering the treatment of *chronic diffuse labyrinthitis* of pyogenic origin, the following facts are of cardinal importance:

The affected labyrinth has ceased to be a functional organ in either of its capacities.

In addition to the special dangers of meningitis and cerebellar abscess, an infected labyrinth is an inevitable cause of continued suppuration and its usual attendant risks.

An ordinary radical mastoid operation is inadequate to bring about the cessation of infective processes within the labyrinth, and, if carried out without extension to the labyrinth in such cases, will leave the ear as a continued focus of infective dangers.

Evidence accumulates that many, probably the great majority of all cases of post-operative meningitis, are instances of operation on cases of unnoticed and consequently untreated chronic diffuse infection of the labyrinth. There is no question that the risks of meningitis are far greater in such cases if the labyrinth is not opened up than if a properly planned operation on the labyrinth is carried out.

Such an operation must have for its objects the adequate opening and drainage, and the ultimate sound healing, of the infected labyrinth. The special dangers are as before. The exact procedure will be considered later.

Chronic local labyrinthitis means, for the purposes of this paper, erosion of either the external or superior semi-

circular canal. It may be a mere absorption or caries of a part of the thickness of its wall, or may expose the periosteal lining membrane of the canal without affecting its interior, or may bring about the local infection and blocking of the interior of the canal. It may be debatable whether any but the last condition is strictly included within the title of this paper, but the conditions so shade into each other and their treatment is so simple that I have ventured to include them collectively. Owing to the short length of the superior canal which is exposed in the cavity of the attic, strictly localized lesions of this canal are very rare; the ampullary part is practically all that is exposed, and fistulae into the ampullae almost inevitably lead to infection also of the vestibule, and so become diffuse. Nearly all cases of local labyrinthitis are thus concerned with the external canal only.

In local labyrinthitis we have to deal with a labyrinth functionally intact, as in cases of simple erosion or of fistula of a canal without infection of the interior of its lumen, or at the most with a labyrinth in which the function of one canal has been interfered with or destroyed, while the labyrinth as a whole remains functional and capable of preservation. It is thus of the greatest importance to avoid if possible all destructive operations on the interior of the labyrinth; treatment should be as conservative as is consistent with safety and with the effective relief of the patient. As in these cases we have to deal with a strictly localized infection which does not involve complicated and narrow cavities, the mere local removal of infected tissues by curetting is all that is necessary. The diagnosis of labyrinthine fistula is, however, a sufficient indication for early radical operation on the ear; for, apart from the manifest inconvenience and danger caused by liability to attacks of paroxysmal vertigo, we must consider the possibility of the penetration of the general cavity of the labyrinth at any time by pyogenic organisms of high virulence, and the resultant disaster of an acute labyrinthitis.

The treatment of diffuse infective labyrinthitis, whether acute or chronic, is necessarily operative. Its technique, while varying in some minor features in the two conditions, is in the main determined by the site of perforation of the outer wall of the labyrinth. The opening, disinfection, and drainage of the vestibule is enough to ensure complete healing, except in cases of tuberculosis, in which caries sometimes extends along the semicircular canals and calls for their opening in their whole length. Drainage of the vestibule may be carried out by opening it either below the facial nerve through the inner wall of the tympanum, or above this structure through the ampullary region of the attic, or behind its descending part through the posterior wall of the vestibule. In practice, I have found that opening below the nerve is a satisfactory operation, that the superior opening is by itself inadequate to ensure free drainage and must be combined with the inferior opening, and that the posterior route through the hinder wall of the vestibule is troublesome and difficult to carry out and more awkward in after-treatment. The operations I shall describe will, therefore, be those of the inferior opening, which will be called "inferior vestibulotomy," and of the combined superior and inferior openings, which will be called "double vestibulotomy." Inferior vestibulotomy is applicable to all cases in which the entrance of infection has been through the tympanic part of the labyrinthine wall. Double vestibulotomy should be carried out in those cases in which entrance has been through the canals or the roof of the vestibule. The performance of the radical mastoid operation is a necessary preliminary to all operations on the labyrinth, and will be assumed to have taken place. The cavity must be well open, and as dry as possible. Good illumination is absolutely necessary, and is best secured by a head-lamp furnished with a small metallic filament lamp. The necessary removal of the labyrinth wall may be done by means either of hammer and small gouge, with a cutting edge $\frac{1}{8}$ in. broad, or by means of power-driven burs. Personally, after some considerable experience with both, I greatly prefer to use the gouge, as being emphatically the more exact and delicate instrument.

All débris, granulations, or thickened mucosa must be removed, and the anatomical features of the operation cavity must be clearly identified.

The mastoid cavity will vary widely in size and form in different cases. It should be as spacious as the arrangement of the dura mater in the individual case will allow in order that access may be easy. A very thorough removal of the posterior meatal wall and of the facial spur must be made, so that the whole of the inner wall of the tympanum is rendered visible. The great part of this is formed by the promontory; on the posterior border of the promontory will be seen, above, the pelvis ovalis; the floor of this deep narrow fossa cannot be distinctly seen, but the presence or absence of an intact footplate of the stapes may be determined by the gentle use of a fine probe. At the lower part of the posterior border of the promontory is the notch which marks the free border of the outer wall of the fossula rotunda; the latter leads upwards under cover of the overhanging promontory to the round window. Immediately above the pelvis ovalis the tympanic part of the facial nerve passes backwards and downwards. When its bony canal is intact it can usually be readily identified. The nerve is, however, frequently bare in this part in cases of chronic suppurative otitis media, and great care must be taken in the use of curettes in this neighbourhood to avoid injury to it. Passing again upwards and backwards from the position of the facial nerve, the smooth eminence of the external semicircular canal is conspicuous in the inner wall of the open aditus. It may be normal, or flattened by erosion, or may be perforated. The commonest form of labyrinthine fistula is a narrow slit about 2 mm. in length, looking almost like a dark hair, lying along the course of the external semicircular canal in the aditus. The ampulla of the external semicircular canal lies at the anterior end of its outer limb, and is situated in the attic immediately above the anterior end of the pelvis ovalis. The ampulla of the superior semicircular canal lies immediately in front of that of the external canal, and at a slightly higher level. Immediately in front of this is the geniculate ganglion of the facial nerve. The exact locality of the point of penetration must, when possible, be established by vision, or, if necessary, by the careful use of a delicate probe.

Inferior Vestibulotomy.—In this operation the part to be removed is included within a small oval with long axis vertical, the upper pole lying along the upper margin of the pelvis ovalis, the posterior curve being against the posterior wall of the tympanum, and the lower pole being cut by the notch in the posterior margin of the promontory which overhangs the fossula rotunda. The tympanic part of the facial nerve lies immediately above and behind the upper pole, and is often bare in cases of chronic infective labyrinthitis. Care must, of course, be taken to avoid bruising or section of the nerve. The small piece of bone within these limits includes nearly the whole of the outer wall of the vestibule, and may be removed by two cuts with the gouge, along its posterior and anterior limits respectively. It should be lifted out with a small curette or forceps. The contents of the vestibule—disorganized membranous structures, or, in chronic cases, granulations—are then removed by the gentle use of a curette, and the interior of the vestibule is disinfected by being swabbed out with pure izal, formalin, or strong solution of biniodide of mercury—1 in 500. Rough curettage must be carefully avoided; it is very apt to result in a flow of cerebro-spinal fluid, and though in the majority of cases no serious consequence follows, it is evidence of the opening of the fundus of the internal auditory meatus with its attendant risks of meningitis. It is not necessary to curette the ampullae, as I have in the past advised.

Double Vestibulotomy.—In this operation the inferior opening is carried out precisely on the lines already laid down for inferior vestibulotomy. The superior opening is commenced along the line of the external arcuate eminence, the lumen of the canal is opened, if not already open, and this opening is carried forwards until the ampulla of the external canal is opened. By extending the removal of bone slightly upwards and forwards the ampulla of the superior canal is reached and opened. The two ampullae are thrown into one cavity, and the spur of bone which projects outwards in the roof of the vestibule between their openings is cut away, thus completing the removal of the roof of the vestibule, and, in conjunction with the inferior opening, the operation on the vestibule. The facial nerve is left enclosed in a bridge of bone which separates the upper from the lower opening.

The final stages of both inferior and double vestibulotomies are carried out exactly on the lines of an ordinary radical mastoid operation. The post-aural wound is completely closed or is left open at its lower end and drained according to its extent and the position of its lowest parts. The whole cavity is lightly packed with gauze wrung out of parolene. The meatal flap may be of any form preferred, provided that it gives free access and exposure to all parts of the inner wall of the cavity. Under no conditions should immediate grafting be carried out over the region of the open vestibule, as it is safer to let these cavities heal by cicatrization, or, if secondary grafts are applied, to restrict their use to the parts of the cavity which lie entirely behind the area of the operation on the labyrinth.

After-treatment of Vestibulotomies.—As a rule the patient exhibits no special features which would distinguish the case from one of a simple radical mastoid operation. The temperature should be closely watched, any significant rise calling for the immediate dressing of the cavity and the careful consideration of the possibility of commencing meningitis. The first dressing is usually carried out after forty-eight hours. The parolened gauze is comparatively easily withdrawn; the cavity should be well irrigated with izal 1 in 400, or mercury biniodide lotion 1 in 2,000, inspected, and again lightly packed. Subsequently daily dressings are carried out. As a rule there is a good deal of filling up of the operation cavity, particularly in its tympanic part; the opening in the vestibule early becomes filled up by granulation tissue, and can no longer be identified.

There appears to me to be little or no opportunity for the use of vaccine treatment in cases of labyrinthitis unless they are already complicated by intracranial infection. The nature of the labyrinthine infection can only be established with any certainty by cultures made from the interior. The *Streptococcus pyogenes* has been recovered in pure culture from some of my cases, but, except in the rare event of acute labyrinthitis occurring in the course of a recent acute otitis media of known bacterial nature, no conclusion would be justified as to the infective agent within the labyrinth except by direct culture from its interior. Further, the labyrinth is already destroyed functionally when it is the seat of a general infection, while the patient's condition is urgent, and can be satisfactorily relieved by operation without further damage to function. After opening and draining of the vestibule the interior of the labyrinth seems to heal readily and soundly. There is thus neither time for the preparation of a vaccine, even if the nature of the organism could be fixed, before operation, nor is there need for its use once the vestibule has been opened. The cases of simple fistula of the wall of the canal and those with only local infection of the interior, on the other hand, occur exclusively in chronic suppurations, the bacteriology of which is most complicated and difficult. A radical mastoid operation is called for in these cases on general principles, and is entirely adequate for their treatment. When there is any question of meningitis, however, I am always in the habit of making early exploratory lumbar puncture, and of making every use possible both of vaccines and of serums, combined with the most efficient drainage of the meninges which I can secure.

Tuberculous labyrinthitis may in its early stages be so far restricted to the vestibule, or to the vestibule and cochlea, that it can be treated by an ordinary vestibulotomy, or by such an operation with forward extension into the cochlea by the removal of further portions of the promontory. In its later stages, however, it tends to extend along the lines of the semicircular canals, from which caries may spread into the deeper parts of the petrous, causing deep-seated tuberculous abscesses within the bone, and sometimes extending to the dura mater of the middle or posterior fossae. In all cases of tuberculous labyrinthitis the proximal parts at least of the superior and external canals should be opened, and if disease is found to extend along their lumina, they must be followed until healthy canal is reached. To do this may be an operation of extreme difficulty, and under these circumstances it must be confessed that burs are almost a necessity in excavating along the more remote parts of the canals. Any diseased part of the dura mater must be freely exposed and appropriately treated.

Necrosis of the Labyrinthine Capsule.—Necrosis may result either from an acute infective labyrinthitis or from the destruction of the blood supply of the bony labyrinth by surrounding disease, as in some cases of tuberculous disease of the petrous. It may be restricted to the posterior part of the labyrinth (posterior wall of the vestibule and the semicircular canals) or to the cochlea, or may include both parts in continuity. It is frequently associated with extradural suppuration in the middle fossa in connexion with the superior canal, or in the posterior fossa in connexion with the posterior canal. Cochlear sequestra lie superficially on their tympanic aspect, and may even be spontaneously discharged through the external auditory meatus. They crumble readily, and can easily be removed by the use of a curette after a preliminary radical operation. Sequestra of the posterior part of the labyrinth, on the other hand, may be deeply buried, coming to the surface of the operation cavity through a small fistula only. They may thus easily be missed. Their removal may require a large exposure of the dura mater, which may be suppurating and softened, and the operative difficulties are much enhanced by the course of the facial nerve, which may lie across the outer face of the sequestrum. The cavities so created must be well drained. Like many other exceptionally large cavities in aural operations, they heal conspicuously well.

No special medical treatment is either necessary or apposite in cases of infective labyrinthitis of pyogenic origin, either before or after operation. In operation cases the usual medical after-treatment of an operation case will be all that is called for. The vertigo resulting from the sudden destruction of one labyrinth in acute infective labyrinthitis as a rule subsides almost immediately and completely after operation and with rest in bed. Should it be troublesome 30 m doses of dilute hydrobromic acid, with 10 grains of ammonium bromide, every four hours will give relief. It is possible that cases of pyogenic infection of the labyrinth may occur in some forms of meningitis. I am not concerned with their diagnosis, and they call for no special treatment. The introduction of the question of translabyrinthine drainage of the meninges is outside the scope of this paper, but very germane to the treatment of such cases, not as cases of labyrinthitis but of meningitis.

The prophylaxis of labyrinthine infection is limited and simple. No patient with continued suppurative otitis media, which resists treatment, and in which there is presumptive evidence of the presence of cholesteatoma, ought to be allowed to remain in a position of danger. The majority of these cases will require the radical mastoid operation; in others, if carefully selected, a more limited operation on the attic and mastoid is sufficient, without disturbance of the tympanum. Finally every case of diagnosed labyrinthine fistula ought to be regarded as suburgent and should undergo a radical mastoid operation without delay. It should never be lost sight of that quite nine-tenths of all infections of the labyrinth take place through pathological openings caused by the eroding power of cholesteatoma.

Of *non-pyogenic infections of the labyrinth*, the most important and best known is syphilis. Syphilitic labyrinthitis may occur in acquired and in inherited syphilis. In the acquired disease it develops typically during the later part of the secondary period; in congenital cases, between the ages of ten and fourteen years in the majority of instances, often quickly following the onset of interstitial keratitis. Treatment of these cases is purely antisyphilitic, and the more vigorous and effective it can be made the better is the very poor chance of survival of any useful hearing. Subcutaneous injection of pilocarpine to the point of heavy sweating and salivation has been much praised in these cases. There seems to be no good evidence that its effects on the labyrinth can be identified, and whether used or not, it should certainly never be allowed to interfere with the more orthodox antisyphilitic treatment.

The deafness of mumps is of labyrinthine type, but, as far as I am aware, nothing certain is known of its pathology. I have no knowledge of any form of treatment of the slightest value, either prophylactic or curative, in this most distressing disease of hearing.

Rarely one sees in the course of an otitis media the development of vertigo and deafness of labyrinthine type,

but of milder character than is associated with the ordinary infections. The patient's general condition, too, does not show the considerable general disturbance which accompanies a typical acute infective labyrinthitis. Whether these cases are due to actual infection of the labyrinth of mild type, or to other alterations in the labyrinth, perhaps of perilymphatic tension, I do not know. They seem to tend largely to recover their normal labyrinthine functions. Whether drugs have any effect in the course of the condition may be open to doubt. There is, however, plenty of justification in precedent for the employment of counter-irritation over the mastoid, the subcutaneous injection of pilocarpine, and the administration of iodides in full doses. Personally I attach considerable value to the free use of sulphate of magnesia internally in the treatment of deep-seated inflammations. But individual experience of the condition is hardly large enough to afford any real guide to the best methods of treatment of such rare cases.

DISCUSSION.

The PRESIDENT said the labyrinth was a maze in which he was still entangled and in a somewhat muddled condition. Fortunately the brilliant investigations of Dr. Bárány would probably get him out at no distant date. The acoustics of the maze were not good—for though a number of his friends were likewise entrapped, he could not hear them. He envied those friends who already knew the inlet and outlet of the maze and saw the clear daylight above them; but, in the strictest confidence, he would like to say that these speering investigators occasionally got mixed up a little and off the right path. Nevertheless, one thing was certain—the two introducers of the discussion possessed the "requirement complex" or *ensemble* of requirements necessary for dealing in a most illuminative and scholarly manner with a most difficult and intricate subject. The methods of examination of Dr. Bárány, which he modestly stated in his abstract "as partly originated and partly worked out by the author," could not be too well known before the operative procedures so ably and forcibly advocated by Mr. West were carried out. These labyrinthine investigations and operations were a most valuable addition to otology, and on behalf of the meeting he begged to offer to Dr. Bárány and Mr. West their sincerest thanks and heartiest congratulations.

Dr. DUNDAS GRANT (London) associated himself with the President in finding the subject of nystagmus in relation to disease of the labyrinth a complicated one, but he thought it could be simplified, and Dr. Bárány had cleared up some obscure points. The speaker used the rotation "after-nystagmus" first for the diagnosis of defective development of the internal ear in cases of supposed congenital deaf-mutism, in place of the rotation vertigo he had used previous to Dr. Bárány's publications. In his clinic, where he had the advantage of Dr. McKenzie's assistance and co-operation, normal rotation nystagmus was found in hysterical nerve-deafness. With respect to the frequency of meningitis of labyrinthine origin subsequent to chronic suppurative disease of the middle ear and temporal bone for which the radical mastoid operation had been performed, the experience of different observers seemed to vary very considerably. Messrs. West and Scott seemed to him to have had an exceptionally high percentage, especially when one considered the extreme rarity of the occurrence at the Central London Throat and Ear Hospital, where for many years large numbers of radical mastoid operations had been performed. No doubt there had been involvement of the labyrinth in numerous instances, but it seemed to have subsided after the mastoid operation, and not to have led to meningitis. It was also possible that cases of labyrinthine suppuration might find their way to general hospitals more frequently than to special ones, but he believed that Mr. Hunter Tod had found them very rare at the London Hospital. The speaker thought Mr. West had left one point still uncertain—namely, how to tell when the labyrinthitis was of the serous form, and therefore likely to subside after the radical mastoid operation. Mr. West had stated that such forms could only be diagnosed by the fact of their subsiding. An operation on the labyrinth would destroy the hearing beyond all chance of its recovery. No doubt there were symptoms, or shades of symptoms, which Mr. West would recognize and be guided by. In any case, Messrs. West and Scott's experience had been of the utmost value, and British aurists, especially the older ones, were much indebted to them for having so enthusiastically worked up the methods of investigation devised and formulated by Dr. Bárány.

Dr. DAN MCKENZIE (London) associated himself with the compliments which had been paid to Dr. Bárány for his valuable discoveries—discoveries which would probably obtain an even wider recognition in general medicine and in neurology than in otology. With regard to diagnosis the speaker warned the members against relying upon spontaneous nystagmus as being in itself a localizing symptom of any weight. The chief value of spontaneous nystagmus lay in the fact that, like vertigo, it was a danger signal, an indication that the vestibular tests should be resorted to in order to ascertain what the cause of the spontaneous nystagmus might be. Stimulated by Dr. Bárány's scientific method of measuring rotation nystagmus the speaker had devised a method of estimating the activity of the vestibular system by means of the caloric test, using water of a standard temperature (22° C. to 24° C.) and measuring the induction period of nystagmus. The results obtained had been reported, and had shown that this modification was not without value and interest. He had found, for example, that a shortening of the induction period indicated a hypersensitive state of the vestibular system, such as was found in neurasthenic conditions. He did not place much reliance upon the duration of the caloric nystagmus because the lowering of the meatal temperature after douching would last for a longer or shorter time according to the atmospheric temperature, saturation with moisture, and other uncontrollable factors. He thought, however, that too much refinement and elaboration in the diagnostic measures were unnecessary. The simple rotation and caloric tests, even if not measured, were sufficient in most cases of infective labyrinthitis to establish the diagnosis beyond all doubt. A source of difficulty in the diagnosis of infective labyrinthitis by the vestibular tests was alluded to. In chronic deafness due to non-purulent middle-ear or labyrinth disease of long standing, the vestibular reactions were generally impaired or absent. If, in such a case, suppuration set in, the absence of a vestibular reaction might be erroneously attributed to purulent labyrinthitis. If only one ear was the seat of suppuration in these circumstances the fact that the reactions were negative in both ears would, however, prevent such an error being made. With regard to treatment he hoped that he would have heard more definite information concerning the indications for operation, an aspect of the question which had recently been exhaustively analysed by Alexander of Vienna. Attention was drawn to the contrast between the conservative labyrinth operation of Mr. West and other English surgeons and the extensive exposure of the dura recommended by Alexander.

Mr. HUNTER TOD (London) said that although he also fully appreciated the value of the splendid work Dr. Bárány had done, and its importance in diagnosing labyrinthine disease, yet he had missed, not only in his paper but also in Mr. West's, what he particularly wanted to know—namely, the indications for operation on the labyrinth. He still wondered if the cases of suppurative labyrinthitis were so numerous as recent publications led one to believe, as he could not help feeling, from his own personal experience, that in many of these cases suppuration did not exist, although this diagnosis might have been suggested by the tests applied. From the London Hospital Reports he found that in the years 1907, 1908, and 1909, he had operated on 302 cases of mastoid disease, including in this category acute and chronic conditions, as well as intracranial complications. Of those cases who died, and on whom an autopsy had been made, only one case was found in which suppuration of the internal ear actually existed, and in this particular case it was noted at the time of operation that there was actually necrosis of the labyrinth itself. He thought the reasonable deduction from this was that even supposing he had failed to recognize suppuration of the internal ear in some of these cases, yet they recovered, on the mastoid operation being performed, or, on the other hand, suppuration of the internal ear had never existed at all. In any case, the mortality from internal ear suppuration seemed

to be very small indeed. With regard to operative procedure, he agreed that the complete mastoid operation should be done in every case showing "fistula" symptoms. If, at the time of operation, a small erosion of the semicircular canal were discovered, it should be left alone, as the symptoms would subside as a result of the mastoid operation. If, on the other hand, granulations or purulent secretion were found to be coming through the promontory or semicircular canals, then of course the labyrinth should be opened up. These cases, however, he had hardly ever met with, although he had made a point of looking for them. If it were determined to open the labyrinth, he considered that the best way of obtaining a clear view of the inner wall of the tympanic cavity was to remove completely the tip of the mastoid process and the floor of the external auditory canal. If this were done, it would be found that it was now an easy matter to open up the cochlea or vestibule by means of a small gouge or mallet. Mr. Tod explained that he only quoted what he had been told with regard to the autopsies. He had chosen the years 1907 to 1909 because during this period a careful examination of the internal ear was made in every case by the pathologist. He admitted, however, that the condition of the labyrinth was only judged by its naked-eye appearances, and that no microscopic nor histological examinations were made in any of the cases, so that it was quite possible that in some of the cases who died of meningitis, the infection had come through the internal ear.

Dr. Jobson Horne (London) asked Mr. West what had been in his clinic the ratio of cases of labyrinthine operations to the total number of mastoid operations.

Mr. Ernest West, in reply, said that he was unable to give any information with regard to the results of destruction of the tympanic plexus; he was in the habit of curetting the whole of the tympanic mucosa and grafting immediately in his radical operations, but had never met any symptoms which he could refer to this cause. He doubted whether the tympanic plexus was not already destroyed by chronic suppurations long before operation. He did not consider that the wide exposure of the dura mater of the posterior cranial fossa was in any sense necessary in view of the possibilities of post-operative meningitis; he believed this complication to be rare, and had only seen it twice after adequate operations on the vestibule, one of the cases recovering. If drainage of the basal meninges was indicated, he preferred to do this by breaking through the inner wall of the vestibule into the internal auditory meatus, a method which followed the track of infection and gave excellent drainage of the subarachnoid space. He considered that the danger of spread of infection to the cerebellum and meninges in labyrinthine infections was a real one; the connexion between cerebellar abscess and the labyrinth had been specially emphasized by the work of Mr. Whitehead, while the beautiful work of Mr. Scott had made the genesis of translabyrinthine meningitis a matter beyond question. He considered the ordinary routine *post mortem* examination of the labyrinth as of no value whatever; the only method was that of histological examination. The indications for operation on the labyrinth he considered to be quite clear; he would express them as, first, the presence of acute infective labyrinthitis, the diagnosis of which Dr. Bárány's paper had put clearly before the meeting; secondly, the diagnosis of a defunct labyrinth, confirmed by the discovery at operation of a fistula through the ampullae or through the inner tympanic wall, or, in the absence of previous diagnosis, by default of proper testing, such discovery of undoubted aperture into the vestible; thirdly, the continuance of disabling vertigo in fistula of the external semicircular canal after a radical mastoid operation and local curettage had failed to give relief. Such cases were rare, but he thought one occasionally met with cases of slowly progressive infection travelling along the canal. Simple fistulae of the external canal he had never submitted to operation on the labyrinth in the first instance. The amount of bone to be removed in order to get a sufficient exposure of the inner tympanic wall he considered to be purely optional; he had always found the removal he described fully adequate. He regretted that he had no recent statistics ready as to the ratio of labyrinth operations to the total radical mastoid operations in his clinic; when he had read the paper on the subject with Mr. Scott some two and a half years ago, they had found that about one in ten of their radical mastoid cases required labyrinth operation; but the cases which were operated on at St. Bartholomew's were nearly always of very long-standing suppuration, the majority with cholesteatoma. He thought the proportion had remained about the same, and his recollection was that Dr. Milligan had given figures which corresponded fairly closely with this from his Manchester clinic.

SOME REMARKS ON THE CONNEXION BETWEEN IRRITATION OF THE MUCOUS MEMBRANES THROUGHOUT THE BODY AND MIDDLE-EAR CATARRH.

By Mark Hovell, F.R.C.S.Edin.,
Consulting Aural Surgeon, London Hospital.

Although all aurists know full well that the mucous membrane which lines the tympanum and Eustachian tube is continuous with that which lines the nose and its accessory cavities, and, through the naso-pharynx, pharynx, and oesophagus, is in direct communication with that which lines the stomach and intestines, yet the vast area with which the tympanum is thus connected is sometimes forgotten, and it is not realized that an irritation in one part of the mucous membrane is communicated in a greater or lesser degree over the whole of its surface, and must therefore affect the special organ which has to be treated.

The first stage of middle ear disease is associated with deficiency in the ventilation of the tympanum due to the supply of air being interfered with by a swollen condition of the tissues lining the Eustachian tube, which, when not produced by a transient catarrh, is frequently due to a catarrhal state of the nasal mucous membrane which may be termed a septic rhinitis; by that I mean a nasal catarrh which probably is often the result of septic material which has found its way into the nostrils, its presence being shown by effervescence when a solution of peroxide of hydrogen is introduced.

Next in frequency to this is the chronic congestion of the naso-pharynx, with an accompanying excessive secretion of mucus, resulting from nasal obstruction, which may arise from hypertrophy of the lining membrane of the nose, due to the irritation produced by the condition just referred to or other causes, or to the irritation from polypi, necrosed bone, and the septic condition of the cavity which results. The importance, therefore, of carefully examining the nostrils and treating any affection which may be present cannot be too strongly emphasized.

Some years ago an elderly gentleman consulted me who previously, for about six weeks, had undergone treatment of injections of air into the tympanum through a catheter without permanent benefit. I noticed as he entered the room that he was breathing through his mouth and that he spoke with a nasal intonation, and on examining his nostrils found them both plugged with polypi, the ear having been treated in the manner mentioned without the nose being examined.

Much useful information may be obtained by examining the naso-pharynx with a mirror after the soft palate has been anaesthetized and drawn forward, but unfortunately a common sight at the present day is a large amount of adenoid growth left behind at a hurried operation, due either to the patient not having been sufficiently anaesthetized or to no anaesthetic having been administered.

In my book on diseases of the ear, the first edition of which was published in 1894, the desirability is pointed out of passing a finger into each fossa of Rosenmüller before concluding the operation to make sure that all growth had been removed from this region; but often now the track of a curette may be seen along the centre of the naso-pharynx, and adenoid growth left on each side of it, in the position in which, from an aurist's point of view, it is most important that it should be removed—namely, the area around the pharyngeal extremity of the Eustachian tube—and, consequently, one of the principal objects for which the operation was undertaken is not attained.

Associated with impairment of hearing and tinnitus in young adults after an operation for adenoids, cicatricial bands may often be seen across the fossae of Rosenmüller resulting apparently from abrasion of the contiguous surfaces at the time of the operation. In many cases an improvement results from these bands being broken down.

Whilst speaking of the operation for adenoid growths, I will again urge the desirability of passing a snare through the nostrils, and snaring off the posterior extremity of the inferior turbinated body when it is enlarged, which is frequently the case. No harm can be done by this procedure, and if the end is not enlarged of course there is nothing to take away; but when hypertrophied, unless it is removed, nasal respiration is often not restored, and naso-pharyngeal congestion remains, and, as a consequence, imperfect patency of the Eustachian tubes.

I was taught that if adenoid growths were removed the hypertrophic condition of the mucous membrane of the nose must subside, but some years ago I learnt that this view is erroneous by a patient being brought back to me with pronounced mouth breathing on whom I had operated and carefully removed all the adenoid growth. To ascertain the cause of the failure the soft palate was anaesthetized, and on examining the naso-pharynx with a mirror, it was seen that both choanae were almost closed by the swollen posterior extremities of the inferior turbinated bodies. Since then I have made a practice of passing a snare through the nostrils before concluding the operation and removing the posterior extremities when enlarged, and I attribute the almost entire immunity from recurrence of growth in my patients to this occurrence.

I have had many patients brought to me after being operated upon by throat specialists for adenoid growths, with the complaint that no benefit had resulted from the operation which had been performed, and in each case the failure has been found to be due to the posterior extremities being enlarged and not having been removed, a cure being established after this had been done.

Another frequent cause of closure of the Eustachian tubes is granular pharyngitis, especially when there is a ridge of granulations situated behind the posterior pillar of the fauces. I believe that I was the first to point out that granulations in this position are the cause of that itching sensation, deep in, on the floor of the ear which patients try to remove by scratching through the meatus, but granular pharyngitis and the naso-pharyngeal catarrh with which it is so often associated, will not be relieved generally until its etiology is better understood.

The erroneous teaching of thirty years ago still prevails —namely, that it is due to improper voice production, and is therefore found amongst barristers, clergymen, hawkers, and costermongers; and it is still treated as if it were a local condition, the usual remedy primarily suggested being cauterization of the granules, whereas, in my opinion, the source of irritation which produces the disease should first be removed, and the cautery reserved for those granulations which do not subside when the mucous surfaces have been restored to a healthy condition.

As regards the term "clergyman's sore throat," I think it should be deleted from medical nomenclature, as its incorrect etiology does not tend to induce sound treatment.

As I pointed out about eighteen years ago, granular pharyngitis is usually the result of irritation of the gastro-intestinal and utero-vaginal mucous membrane, and consequently is as common amongst females who do not use their voice as amongst the class of males who were supposed to specially suffer from it. It is true that when granular pharyngitis is present reading aloud or excessive use of the voice aggravates the abnormal condition, but it is not usually its primary cause. Although irritation of the mucous membrane can generally be proved to be the cause of the malady by the affection subsiding when the evident source is removed, yet it must not be forgotten that a reflex irritation may exist in a degree which is not sufficient to produce marked symptoms. There are a few cases in which residence in a damp climate appears to be the chief cause, and it is well known that the condition is generally aggravated by wet weather, and sometimes by east winds.

As it is most important for the successful treatment of middle-ear catarrh that granular pharyngitis and the naso-pharyngeal catarrh which so frequently accompanies it should be removed, it is evident that its etiology should be fully recognized by aurists with a view to treatment.

We all know that irritation of one part of the gastro-intestinal tract makes itself apparent in another region, as shown by a foul tongue when there is gastric disturbance, colitis, or constipation, and it does not require a great flight of imagination to realize that the utero-vaginal mucous membrane is in sympathy with its kindred tissue. As an instance I may mention: About two years ago an unmarried girl of 22 consulted me with regard to her throat, as she wished to take up singing professionally. She told me that she had seen six throat specialists, but that her throat was no better for the treatment. I found that she had a considerable amount of congestion of the pharynx and pronounced granular pharyngitis, and as there were not sufficient abnormal conditions in her nose and gastro-intestinal tract to account for this, I thought that there might be some pelvic derangement, and therefore sent her to a gynaecologist, who reported that she had retroversion and retroflexion of the uterus, chronic cervicitis, and an erosion about the size of a shilling. He replaced the uterus into its normal position, curetted the cervix, and kept her in bed for about ten days. When I again saw her, soon after leaving the nursing home, the congestion of the pharynx had almost disappeared, and the granular pharyngitis had greatly subsided, although nothing had been done locally. I conclude that the throat specialists whom she had previously seen treated the granular pharyngitis as a local affection.

Recently I was consulted for deafness by a young married lady who had one child, and her pharynx was found to be intensely congested and granular. There was no history of recent dyspepsia or of constipation, and I therefore thought that her pelvic organs might be at fault, so advised her to consult a gynaecologist. This she did, the gentleman she selected not being the same as mentioned in connexion with the previous case. He reported that the uterus was acutely retroverted and flexed.

It is not only displacements of the uterus, however, which are associated with granular pharyngitis, but many uterine diseases such as fibroid tumour and other affections which give rise to menorrhagia, and with this condition a persistent granular pharyngitis is often found.

In my book on the ear, when speaking of the causes of granular pharyngitis, profuse leucorrhoea is mentioned as a cause, but from extended experience I consider that the word "profuse" should be deleted. A vaginal discharge and a naso-pharyngeal catarrh are not infrequently associated and the addition of a vaginal douche to the throat and nose remedies already employed will often in a short time markedly diminish the naso-pharyngeal catarrh.

My friend, Dr. Wainwright of Folkestone, is well aware that vaginal discharges are the cause of many neuroses. A patient of his some time ago was suffering from naso-pharyngeal catarrh, violent cough, and arthritic knee pains which had been diagnosed as gouty. The cough was distressing and the throat foul, congested and swollen, and markedly granular.

Inquiries elicited the existence of a vaginal discharge, and further investigation resulted in the discovery of a forgotten pessary. After the removal of the pessary the cough and arthritic pains disappeared and the throat resumed its normal condition.

As another instance of vaginal irritation producing congestion of the pharynx and naso-pharynx, I may mention that some years ago an actress whom I had been attending for granular pharyngitis came to see me after the interval of some months. Her pharynx was intensely congested, and as there was no evidence of sufficient disturbance in the gastro-intestinal tract to account for this I inquired whether she still had leucorrhoea, from which she had previously told me that she had suffered. On hearing that it was very bad indeed, and there was a considerable amount of local irritation, I advised her to consult a gynaecologist, who reported that she was suffering from gonorrhoea.

A profuse leucorrhoea is generally caused by endo-cervicitis, and an erosion of the cervix is by no means

uncommon even in girls who are unmarried, and no one with gynaecological knowledge can pretend that the erosion will be cured by the use only of a vaginal douche, or that its presence can be diagnosed except by highly educated touch without a speculum being introduced; nor can the endocervicitis be removed without local applications to the cervical canal, or in severe cases by curettage.

A small-sized Roper's speculum has been shown to me specially designed for unmarried girls, the larger blade being only seven-eighths of an inch in diameter, which it is said can be passed usually without the slightest difficulty or causing abrasion.

I have had under my care a number of cases of naso-pharyngeal catarrh and granular pharyngitis associated with a vaginal discharge sufficient in quantity to cause discomfort, occurring in both married and unmarried women, which have not got well until the patient has been placed in the hands of a gynaecologist for treatment of the cervical catarrh, and in many cases I have been informed that a large erosion existed.

I have dwelt specially upon the relation between granular pharyngitis and naso-pharyngeal catarrh in connexion with uterine displacement and irritation of the utero-vaginal mucous membrane, because it is not as yet universally recognized, and the treatment of middle-ear affections, catarrh in the naso-pharyngeal region, etc., is chiefly confined to local measures, which I hope I have shown will not be curative in many instances until the reflex sources of irritation are removed.

DISCUSSION.

The President was sure Mr. Hovell would permit him to say that on the surface his paper appeared to be rather commonplace and somewhat different to the usual scientific dissertations. Nevertheless, such contributions were of paramount importance and of incalculable value to practitioners and patients. He congratulated Mr. Hovell in bringing forward some of the commoner phenomena of life and disease, which were often either neglected or forgotten. He agreed with Mr. Hovell that the gynaecologist was often of the greatest assistance in the treatment of certain forms of vertigo, tinnitus, vasomotor rhinitis, and catarrhal troubles of the naso-pharynx. He was pleased that Mr. Hovell had emphasized the great pathogenic importance of bands, adhesions, pits, and an unhealthy condition of Rosenmüller's fossae. He had pointed this out at a meeting of the old Otological Society in 1906. This condition frequently accounted for recurrences of earache and deafness after imperfect adenoid operation. It was a subject which had received more attention in America than in this country.

Dr. Frederick Spicer (London) agreed with Mr. Hovell, especially as to the desirability of the removal of the posterior ends of the inferior turbinate bones when enlarged, and remarked on the frequency with which the adenoids in Rosenmüller's fossae were left behind by even experienced operators. He was constantly seeing cases where the operation had failed to cure, either on account of imperfect removal of adenoids or enlarged turbinals.

Dr. Jobson Horne (London) fully concurred with Mr. Hovell upon the importance of paying attention to the size of the posterior ends of the inferior turbinated bodies when operating for the removal of post-nasal obstruction and the attendant catarrh and deafness caused by an enlargement of the adenoid tissue in the post-nasal space. For some time past he had realized that not only in adult life, but also in child life, the posterior ends of the inferior turbinated bodies were quite as material a factor as the shrivelling adenoids in the nasal symptoms. The evil that adenoids caused by the congestion and subsequent hypertrophy of the posterior ends of the turbinated bodies lived after the atrophy of the adenoids, and unless the posterior ends of those bodies when enlarged were reduced at the time of the operation, then the object of the operation, namely, the relief of nasal obstruction and its accompanying symptoms, would not be achieved. The speaker also cited cases in which vagino-uterine reflexes had a bearing upon the singing voice.

EXPERIMENTS BEARING UPON THE PRACTICABILITY OF TREATING MENINGITIS (SEPTIC AND SPECIFIC) BY MEANS OF LAVAGE OF THE CEREBRO-SPINAL SUBARACHNOID SPACES.

By J. Stoddart Barr, M.B., Ch.B.Glasg.,
Assistant to Lecturer on Aural Surgery, University of Glasgow.

(*Preliminary Communication.*)

In this brief communication I wish (1) to outline some experiments conducted by me upon the cadaver with a view to testing the practicability of employing lavage as a means of removing or acting upon the pathological elements (pus, exudate, and pathogenic organisms) which are found in the cerebro-spinal subarachnoid spaces as the result of a leptomeningitis; and (2) to draw attention to a case of fatal purulent leptomeningitis in which I employed lavage of the subarachnoid spaces when the patient was *in extremis*.

1. The experiments were carried out entirely under my own initiative during the summer of 1909. The first was made upon the body of a child who had died of epidemic cerebro-spinal meningitis, and was conducted in the following manner:*

The body being placed on its right side upon a table and the head supported by means of a wooden block, lumbar puncture was performed, and the hollow needle left *in situ*. A small quantity of turbid fluid escaped but soon ceased to flow. Through a trephine opening in the skull, made above and behind the left ear, a cannula trocar was introduced into the lateral ventricle, and, on removing the trocar, a small quantity of turbid fluid escaped through the cannula. By means of a rubber tube attachment and a glass funnel held 2 in. above the head, water tinted with carbol fuchsin was allowed to flow into the ventricle. Almost immediately turbid fluid began again to drop from the needle in the lumbar region, and in less than a minute the escaping fluid was found to have a reddish tinge; it continued to flow as long as the fluid entered the lateral ventricle. The higher the elevation of the glass filler the faster became the flow of stained fluid from the needle, and the flow was allowed to continue for over a quarter of an hour. The brain was then removed and carefully examined, when the course of the fluid introduced into the ventricle could be easily traced by the red coloration into the fourth ventricle via the foramen of Monro, third ventricle and iter. From the fourth ventricle the fluid found exit into the subarachnoid space (cerebello-medullary cistern) through the foramen of Majendie, and possibly also through the two lateral apertures. It stained the entire cerebello-medullary cistern, passed forward into the interpeduncular cistern, upwards along the Sylvian fissures over the anterior ends of the temporo-sphenoidal lobes, and even along the vaginal sheaths of the optic nerves. The course of the coloured fluid could also be traced downwards along the spinal subarachnoid space.

The same experiment was repeated on several other fresh subjects with similar results. This at least established the fact that fluid may pass uninterruptedly from the ventricular system into the basal and spinal subarachnoid spaces.

2. Whilst making the preliminary preparations for experimenting upon living animals, I found, after various trials, that for my purpose dogs were unsuitable, and I was arranging for experimenting upon monkeys when a case (a boy of 13 years of age) of advanced purulent leptomeningitis, secondary to a chronic purulent ear affection (left), came under my care in the hospital on October 16th, 1909. The symptoms were typical of the worst form of the disease, and lumbar puncture verified the diagnosis, the fluid withdrawn being turbid, containing streptococci in chains, as well as pus cells. The radical mastoid operation, including the opening of the dura mater and the employment of such therapeutic measures as urotropine, 10 grains four times daily, repeated lumbar puncture, and several subcutaneous injections of antistreptococcic serum, led to no improvement in the condition, and, two and a half days after admission to the hospital, the patient was obviously moribund. He was in a state of coma, the temperature was over 103° F., pulse 130 per minute and feeble, and the breathing markedly Cheyne-Stokes in type. After consultation with our consulting physician,

* I am indebted to Dr. Morton, of Lightburn Fever Hospital, for facilities in conducting two of my experiments and for his valuable help in carrying them out.

Dr. John Love, it was considered justifiable to operate in the same way as I had done in the cadaver.

Operation.—Under chloroform anaesthesia lumbar puncture was first carried out, a fine cannula being employed, and over an ounce of turbid fluid was removed. The lumbar cannula being left *in situ*, a half-inch trephine opening was made in the cranium above and behind the left ear, and a wide cannula-trocar was passed into the left lateral ventricle, when the trocar was removed. There was immediately a gush of semiturbid fluid, large in amount and under great pressure. The pulse at once steadied, slowing from 130 to slightly under 100 per minute, and the respirations became regular and ceased to exhibit the Cheyne-Stokes type. After the flow had ceased from the lateral ventricle a rubber tube was passed through the cannula into the ventricle, and the cannula was removed. By means of a glass funnel attachment, sterilized saline solution, at a temperature of 100° F., was allowed to flow into the lateral ventricle, the glass funnel being at first held about 2 in. above the level of the head. In a few seconds turbid fluid began to drop from the lumbar cannula. The glass funnel was then raised higher, so that ultimately it was held fully a foot above the head, when a constant stream of turbid fluid, mixed with flakes of exudate, escaped from the cannula in the lumbar region. This was carried on for quite an hour, and at the end of that time more than half a pint of turbid flaky fluid had been collected in a measure glass. As a final step, 10 c.cm. of anti-streptococcic serum were introduced into the lateral ventricle through the rubber tube. The cannula in the lumbar region was then removed, but the rubber tube, fixed by means of sutures, was left in the lateral ventricle.

The patient bore this prolonged operation well, and at no time during its course was there any sign of syncope or arrest of breathing which might have indicated dangerous pressure upon important centres round the fourth ventricle. It was noted, however, that the respirations increased in rapidity when the glass funnel was raised over a foot. Immediately after the operation the temperature was 101° F., and for an hour or two there was, if anything, a slight general improvement, but no return to consciousness; this slight improvement soon passed off, and death ensued fourteen hours after the completion of the operation.

A *post-mortem* examination confirmed the diagnosis of widely diffused basal leptomeningitis, characterized by the large amount of exudate filling the basal subarachnoid cisterns. There was no other intracranial lesion.

I hope to pursue these experiments further, but thought it desirable at this stage to place the facts I have just narrated before this section. I have at least proved that lavage of the subarachnoid spaces can be carried out on a living person with apparently no unusual danger to life. Time and experience alone will prove if there is any therapeutic value in this method. There is no doubt that the great amount of exudate present in my case prevented the fluid spreading out as far as it would have done in a healthy individual. Perhaps, however, if treatment had been commenced earlier, before the exudate had become so dense and before the patient had been overwhelmed with toxins, the result might have been different.

I should like to hear the opinion of my colleagues as to whether one would be justified in employing this method at an earlier stage of the disease, repeating the lavage daily, or even twice daily; also any suggestions as to a suitable fluid other than saline solution such as a mild antiseptic or digestive fluid, calculated to soften the exudate and deal with the toxins. I would be disposed to combine vaccine-therapy with this method.

REFERENCES.
Quain's Anatomy, and Key and Retzius.

DISCUSSION.

The PRESIDENT congratulated Mr. Barr on his original work, and expressed the hope that he would communicate his further investigations of a subject about which so little was as yet known.

THE VALUE OF OSSICULECTOMY IN CHRONIC MIDDLE-EAR SUPPURATION.

By MACLEOD YEARSLEY, F.R.C.S.,
Senior Surgeon to the Royal Ear Hospital; Medical Inspector of London County Council Deaf Schools, etc.

IN a paper published by Suckstorff, in the *Archives of Otology*, xxxii, 426, on the pathology and treatment of purulent otitis, the indications for the removal of the malleus and incus, and the relative frequency and localization of disease of the ossicles are considered. The former are given as (1) caries of the ossicles; (2) caries of the attic; (3) suppuration from the attic which has not given way to careful and consistent treatment with the tympanic cannula. Suckstorff gives his results in twenty operations, followed up for over one year, as 16 (80 per cent.) cured, 2 (10 per cent.) improved, and 2 (10 per cent.) unimproved. In the second part of his paper he gives the results of examination of the ossicles in 106 radical operations. These results are, briefly, that the malleus was diseased or absent in 89 cases (83 per cent.), being diseased in 36 per cent. and absent in 48 per cent., whilst the incus was diseased or absent in 98 cases (92.4 per cent.), being diseased in 24 per cent., absent in 69 per cent., thus giving preponderance to the incus as regards liability to caries.

I have always considered the extraction of the two major ossicles, provided that the outer attic wall is removed at the same time, to be a useful operation. But the cases in which it is likely to be of value require to be carefully selected. Until now, however, I have never made an analysis of actual cases, whereby I could support this opinion.

The series of cases of ossiculectomy upon which the present paper is based ranges in time from 1897 to February, 1910, and comprises 70 operations upon 65 patients, 5 undergoing the double operation. Of these patients, 23 were males and 42 were females, their ages varying from 6 to 62. The ages in relation to sex are shown in Table A.

All these cases were operated upon for chronic or recurrent discharge, with a view to preventing, if possible, the performance of the radical mastoid operation. The duration of disease varied from three months to many years, the exact numbers being shown in Table B.

The conditions found in the ear at the time of operation

TABLE A.

Age	6	7	8	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	29	30	31	32	33	34	35	36	37	39	40	42	44	45	60	62	Total.
Males	—	—	1	1	2	—	—	1	—	1	2	1	3	—	1	—	1	2	1	1	—	—	—	—	—	—	1	—	1	—	—	1	1	1	23
Female	1	1	—	—	5	1	2	1	1	2	2	1	1	1	—	4	3	2	1	—	2	1	1	1	1	1	—	1	1	1	1	2	—	—	42
Totals	1	1	1	1	7	1	2	2	1	3	4	2	4	1	1	4	4	4	2	1	2	1	1		1	1	1	1	2	1	1	3	1	1	65

TABLE B.

Months.					Years.													Unknown, but Extending over Years.	Total.
3	5	8	12	18	2	3	4	6	7	9	10	14	15	17	19	20	23		
1	1	1	4	1	4	1	6	3	1	1	2	1	2	1	1	2	1	36	70

were as follows, considered under perforation, ossicles, and granulations:

Perforations.

Of membrana flaccida:		
Confined to Shrapnell's membrane ...	5	
Involving Shrapnell's membrane and the superior posterior quadrant	3	
Involving Shrapnell's membrane, with destruction of the membrana tensa ...	4	
	—12	
Of membrana tensa:		
Superior posterior quadrant	16	
Whole posterior segment	12	
Inferior segment	5	
Anterior inferior quadrant...	1	
Anterior segment	1	
Whole membrana tensa destroyed	23	
	—58	
	70	

Ossicles.

Both ossicles were intact in	7
The handle of the malleus was fixed to the inner tympanic wall in	2
The *malleus alone* was carious in	9
Having completely disappeared in 1.	
The *incus alone* was carious in	16
Having completely disappeared in 4.	
Both ossicles were carious in	39
In 6 of these the incus and in 2 the malleus had disappeared.	

In one case the carious malleus and incus were ankylosed, so that they came away together.

In one case the two ossicles showed caries with hyperostosis, both bones being distorted by masses of new osseous tissue.

The *outer attic wall* was carious in 5 cases, or 7.1 per cent.

These results compare with those of Suckstorff, quoted above. The malleus was diseased in 62.8 per cent., having disappeared in 6.2 per cent., whilst the incus was carious in 78.5 per cent., being totally destroyed in 18.1 per cent., the preponderance of caries in the incus being marked. When both bones are diseased one is almost certain to find that the condition is more advanced in the incus. The reason of this greater liability of the anvil to disease lies in the conditions of its blood supply.

Granulation Tissue.

In 20 cases there was granulation tissue. This grew from the region of the membrana flaccida in 6 instances, in 2 of which the remains of the ossicles were embedded in the granulations. In 7 cases it filled the superior posterior quadrant (occupying the site of the incus in one instance), in 6 it was situated inferiorly, and in 1 case the locality from which it grew is not stated in the notes.

In 3 cases there was cholesteatomatous material in the attic.

The operation was performed in every case under general anæsthesia.

As regards instruments, the Delstanche extractor is useful when there is great destruction of the membrana tensa, but when much of the membrane is present a Sexton's knife should be used to detach it. Sexton's pincette is sometimes useful for removing the malleus. The incus, when not much destroyed, is best extracted with a Ludwig's incus hook, but when it is much reduced in size Lake's incus extractor is the better instrument. The outer attic wall was always taken away piecemeal by means of the small sliding chisel of Hartmann, and this removal should be especially thorough in the region of the aditus for purposes of drainage.

The greatest trouble in the operation is haemorrhage. To control this I used to employ peroxide of hydrogen, but have come to depend upon packing with fine ribbon gauze as a better method. In a few instances I have found preliminary instillation with adrenalin useful, but it cannot always be relied upon. When there are remains of the membrane it is important to curette the annulus tympanicus, or a false membrane may form in the process of healing. When possible the tendon of the stapedius muscle should be divided as a final stage of the operation.

As regards the *results* of these ossiculectomies, an attempt has been made to obtain recent information by letter from those of the 65 who were unable to be seen personally, and, although a number of letters remain unanswered and some were returned, I have so far succeeded that only 24 cases remain unaccounted for. Of these the discharge was known to have recurred in 4, whilst of the remainder the ears are known to have been dry from twelve to eighteen months after operation.

The results may be tabulated under hearing, tinnitus, and discharge.

Hearing.

Improved	19
Unaltered	8
Worse	3
Not stated...	40
	70

This, at first sight, does not show much, but the operation being done primarily for suppuration, it was comparatively late in the series that special attention was paid to the results as regards hearing. In a few of the 40 under the head "not stated" are remarks in the notes that the "patient thought hearing was improved," but I make it a rule never to base any conclusions upon such statements, and the remaining 30 were all tested by the voice (spoken and whispered), acoumeter, and tuning-forks, before and after operation. In none was the improvement great, the best case being that of a woman, aged 36, with a posterior superior perforation and caries of the body of the incus, in whom hearing for speech was improved to the extent of 18 in. In the other cases improvement was not more than from 4 to 6 in.

In 2 cases I find it definitely stated in the notes that *tinnitus* was improved.

Discharge.

Cured	41
Improved	3
Recurred, but easily cleared up by treatment	4
Recurred and lost sight of	4
Failed	13
Still under treatment	5
	70

Of the 41 cured (58.5 per cent.), 20 have been lost sight of, but these, it is known, had no recurrence from six to eighteen months after the operation. In the remaining 21 (30 per cent. of the whole 70) it has been ascertained that there has been no recurrence. We may therefore consider that a cure was certainly effected in at least 30 per cent. of cases.

Three cases were definitely improved. These were all tuberculous—one man aged 27, one woman aged 19, and one boy aged 14. The first two died of phthisis six months and three months later respectively. The third underwent a radical mastoid on the right side and ossiculectomy on the left, but I have been unable to ascertain his ultimate course. These 3 cases were improved by the operation, and to them may be added the 20 patients just mentioned as having been lost sight of, but in none of whom had discharge recurred for from six to eighteen months. The number improved may therefore be stated as 23, or 42.8 per cent.

Discharge recurred in 8 cases (11.4 per cent.), 4 of which have been lost sight of. In the remaining 4 the discharge rapidly cleared up under simple treatment and has not since returned. They might reasonably be included under those cured or improved.

In 13 cases (18.5 per cent.) the operation failed to improve the condition, and of these 11 subsequently underwent the radical mastoid operation. Of these, one case, a lady aged 26, is interesting as illustrative of a possible result of ossiculectomy likely to militate against its ultimate success. The patient had suffered from right discharge, the result of scarlet fever, for fifteen years. Ossiculectomy was performed on January 23rd, 1906, and the ear was dry on February 16th. In September a fresh infection occurred during a severe cold, and did not succumb to treatment. A radical mastoid operation in December revealed the fact that the tympanic opening of the aditus had become partially closed by a fibrous cicatrix which prevented the outlet of pus from the antrum.

The other cases needing the radical operation showed cholesteatoma or granulations in the antrum, and one case developed a temporo-sphenoidal abscess one month after the removal of the ossicles.

Of the remaining cases, 5 are, at the time of writing, still under treatment, but 3 of these will probably be ultimately successful.

From the study of these 70 operations the following conclusions may be reasonably drawn:

1. That, in the treatment of middle-ear suppuration, ossiculectomy offers in selected cases at least 30 per cent. of cures and 42.8 per cent. of improvements.

2. That, to give reasonable expectation of success, the operation should not stop at the extraction of the major ossicles, but should include the careful removal of the outer attic wall, especially in its posterior part. The chief objects of ossiculectomy are to provide drainage and to remove ossicles which, by reason of their carious condition, are acting as foreign bodies.

3. That the annulus tympanicus should be subjected to curettement in order to prevent the possibility of a false membrane forming.

4. That, in cases in which the symptoms indicate that the disease is limited chiefly to the tympanum and attic, ossiculectomy should be entertained as an alternative measure before proceeding to the radical mastoid operation, especially as it in no way militates against the success of that operation should the simpler method fail.

DISCUSSION.

Mr. HUNTER TOD (London) said that he was much interested in the paper which had just been read, as he himself had performed this operation frequently in the last few years, and entirely agreed with Mr. Yearsley as to the good results which might be obtained. He submitted that the operation should be done more frequently, not only in the accepted type of case of chronic attic suppuration, but even where the ears were filled with granulations or polypi, and there were also symptoms of caries in the tympanic wall; and he would only perform the complete mastoid operation in those cases in which there was obvious sign of mastoid process, such as a fistula into the external auditory canal, or through the cortex of the mastoid itself, or in which there was cholesteatoma, or in which there was obvious active inflammation shown by pain or tenderness over the mastoid process, pyrexia, or for constitutional symptoms. He admitted that in some cases the operation was a failure. He himself had been successful in about 50 per cent.; in about 30 per cent. there was still a certain amount of discharge, chiefly through the Eustachian tube region—that is, in at least 80 per cent. the mastoid operation had been avoided; in only 3 cases out of over 100 had it become necessary to perform subsequently the mastoid operation, and in one case alone did death occur, and that from lateral sinus thrombosis a year later. With regard to the hearing power, in over 20 per cent. the voice could be heard over 12 ft. off. In favour of ossiculectomy was the simpleness of the operation and the shortness of the after-treatment, and, in addition, the minimizing of the expense to the patient.

Dr. FREDERICK SPICER (London) congratulated Dr. M. Yearsley upon his paper, but differed from his conclusions—indeed, his results and those of others he had witnessed had been so unsatisfactory that he had given the operation up altogether, and he considered that, at the present day, it was almost unjustifiable.

Mr. C. E. WEST (London) said that his experience of the operation was limited to some thirty cases. He considered that the limits of usefulness of the operation were very narrow. It was useless in cholesteatoma and in all cases of infection of bone outside the ossicles and a limited area of the outer attic wall. In his opinion the sole advantage of the operation, when successful, lay in the shortened period of convalescence and the possibility of dealing with the cases as out-patients. The disadvantages were that the percentage of cures, even in selected cases, was enormously less than that following the radical operation in unselected cases; that the damage to hearing was at least as great as after the radical mastoid operation; and that in chronic local attic suppuration the removal of the ossicles was an unnecessarily destructive procedure, the opening up of the attic and antrum being sufficient, and giving excellent hearing results. It had to be borne in mind that hearing before operation was above the average in most cases at all suitable for ossiculectomy. He had been much struck by the amount of pain following these small intrameatal operations, which was far greater than after the larger open operations. There were, he was convinced, special dangers attending the operation of ossiculectomy; he was sure that the risks of facial paralysis were greater than in the radical operation, and that the possibilities of dislocation of the stapes were real. He had seen, though not in his personal experience, two fatal cases of this latter accident. He could say that Dr. Bárány had, in the course of conversation, strongly agreed with him on both the latter points.

Mr. MARK HOVELL (London) said that in his experience chronic suppuration in the tympanum was usually associated with a collection of pus or cholesteatomatous matter in the mastoid antrum, and he failed to understand how removal of the ossicula in these cases could put an end to the discharge.

Mr. MARRIAGE (London) stated that in his opinion ossiculectomy was not a satisfactory operation; he had always found that in cases of chronic otorrhoea, where an operation was necessary, extensive disease of the antrum also existed which did not clear up by an intratympanic operation. Mr. Yearsley's statistics only showed healing in 30 per cent. of the cases, and he asked for information as to the duration of the treatment before operation had been carried out; he also asked as to whether the successful cases had occurred in patients who had suffered from otorrhoea for a few months or in those with a history of many years. He further asked on how many occasions Mr. Yearsley had divided the tendon of the stapedius muscle at the time of the ossiculectomy. In reference to the case mentioned by Mr. Hunter Todd, the speaker remarked that otorrhoea had recurred on several occasions and that at the present time a false membrane had formed with a very small aperture which was constantly getting blocked with collections of epithelium and cerumen, producing very marked deafness.

The PRESIDENT considered the great disadvantage of ossiculectomy was the difficulty in selecting suitable cases. He quite agreed with Mr. Hunter Tod that ossiculectomy was a desirable operation "if you could only hit off the right cases," but so far this difficulty was unsolved. Years ago there was more reason for this operation than to-day, when the dangers to life, facial paralysis, continuance of suppuration, and other misfortunes, have been almost completely removed by the perfected mastoid operation; 30 per cent., or even 40 per cent. of cures was not a particularly satisfactory result, especially if one remembered that some of these cases would doubtless have been cured if non-operative treatment had been carried out by a skilled nurse under the reader of the paper's expert supervision.

Mr. MACLEOD YEARSLEY, in reply, said he was sorry to find so many dissentients, but it was always interesting to read a contentious paper, in order to see from what other points of view the subject could be regarded. He would like to point out that the cases upon which the paper had been based extended over a period of thirteen years, and that many of the earlier ones failed from faulty technique, whilst the later ones gave better results. He had never done the classical operation, which he quite agreed was unjustifiable, having always combined it with removal of the outer attic wall. It would be interesting to obtain statistics of a large number of ossiculectomies by various operators, and to compare them with similar statistics of the radical mastoid operation. In reply to Mr. Marriage, he wished to state that all the cases were carefully treated by other methods first, and he would see by the table in the paper that only a very few had been affected for less than one year. He had tried Neumann's method in his last two cases with good result as regarded haemorrhage. The accidents mentioned by Mr. West had never occurred to him, and he had found that with improved technique pain had been much less in his later cases. He divided the stapedius tendon usually after several days, and he quite agreed that, although it could sometimes be done, it was usually difficult at the time of the operation. He believed that tenotomy of this tendon was a very useful procedure to improve hearing when the opposing action of the long process of the incus was lost.

DEAFNESS AND DISEASES OF THE EAR IN RELATION TO THE PUBLIC SERVICES AND INSURANCE:

THEIR BEARING ON FORENSIC CASES AND THE CHOICE OF A MEANS OF EARNING A LIVELIHOOD.

By Jobson Horne, M.D.,
Surgeon to the Metropolitan Ear, Nose, and Throat Hospital; formerly Ernest Hart Scientific Research Scholar, British Medical Association.

The length of the title of this paper is out of all proportion to the length of time officially allotted for the reading of it. I do not for one moment suggest that the title should be curtailed, and it is still further from my intentions to trespass upon the time available for the discussion of the subject. The subject covers a considerable amount of ground, and is one about which there is undoubtedly room for more than one opinion—in short, it lends itself to discussion. I shall, therefore, abstain from elaborating my views, and I shall confine myself to submitting for your consideration points that at times occasion considerable anxiety to those who have to adjudicate upon them.

It is not possible to lay down hard and fast rules, or even general principles of general application, for accepting or rejecting candidates, the subjects of deafness and ear disease, coming within the scope of the title of this paper. What would be applicable to one would not be applicable to another. For example sake, a candidate not acceptable for life insurance might be accepted for accident insurance, and vice versa; whilst a third candidate might be acceptable for both classes of insurance and rejected for any public service, using the term in a comprehensive sense to include the telephone company and the indifferent waitress at the tea-shop. In the title of the paper the term "insurance" has been used so as to cover both life insurance and accident insurance. Now, first of all, as regards deafness and ear disease in relation to life insurance. Let me at once remind you that there is an increasing competition amongst life offices for business, and whilst they are always most anxious to exclude lives the acceptance of which would be an injustice to others insured, at the same time they are not desirous of turning away business. At times there has been a tendency to regard middle-ear disease a little too seriously in the matter of life insurance. In a word, the life office has to temper medical science with business purposes.

The last time that this subject was discussed by the British Medical Association was in 1898, in Edinburgh, at a conjoint meeting of the Sections of Laryngology and Otology and that of Medicine in relation to Life Insurance. The difficulty that confronted that meeting twelve years ago and prevented it from arriving at useful conclusions confronts this meeting to-day—twelve years afterwards. The difficulty was this—an absolute want of reliable statistics upon which to base sound opinions. The meeting twelve years ago naturally dealt with suppurative diseases of the ear, to the exclusion, I may say, of all other forms of disease of the ear and of causes of deafness. They limited their subject to life insurance; to-day we are dealing with the subject in a much broader manner, and before I touch upon the suppurative diseases of the ear I would wish incidentally to refer to the non-suppurative varieties in connexion with life insurance. For instance, can anybody present tell me from reliable statistics what is the average length of life of a person the subject of oto-sclerosis? Further, can any one tell me the causes of death of such subjects, and whether the causes of death have any bearing upon the ear trouble and upon the point of view of the life office? Unfortunately the ear, hitherto, has been regarded too much as an appendage distinct from the body, with the result that our knowledge of the causes of some forms of ear disease has not advanced. In the present state of your knowledge, can you with confidence state that insurance without delay should be recommended in oto-sclerosis?

The suppurative diseases of the ear naturally form the bulk of the aural problems in life offices, and I wish to submit for your consideration and discussion the following points:

Speaking generally, persons suffering from acute inflammations of the external and the middle ear would not offer themselves for life insurance until the acute stage had passed by. However, exceptions arise, life insurance is at times a matter of urgency, would you advise such cases being accepted in the acute stage? Further, is it advisable to put off insurance in cases of chronic inflammation of the external ear?

Passing to the middle ear, I think it will be generally agreed—but even about this matter I know there are two opinions—that chronic suppurative cases should not be accepted if there is inflammation in the attic or the mastoid, if there is cholesteatoma or tuberculosis, or any form of bone disease or facial paralysis, or if there is associated with the middle-ear disease giddiness, headache confined to one side, or any kind of narrowing of the meatus which would prevent a free escape of secretion. Apart from such cases, would you recommend the acceptance of other cases of chronic suppuration of the ear?

Does a permanent perforation of the drum without obvious discharge call for, in your opinion, rejection of the candidate or some increase of premium?

And, lastly, as regards the suppurative forms of disease, should those chronic cases of suppuration regarded as curable by a radical mastoid operation be rejected or even weighted?

With regard to insurance against accidents, I think it will be agreed generally that marked deafness in both ears with vertigo should call for increased terms for acceptance, if not for rejection.

The suppurative forms of disease in the matter of insurance against accidents alone, at first sight should not stand in the way of the acceptance of the candidate. However, there appears to be room for litigation over the meaning to be attached to the term "accident," as shown by the recent case of a widow seeking to recover compensation for the loss of her husband who was deliberately shot in a railway train. In the event of a subject of suppurative disease undergoing an operation for the cure or relief of ear disease succumbing to the operation, should that be regarded as an accident? If so, such cases ought to be weighted for accident insurance.

I will not take up your time in talking platitudes to you about the lack of attention paid to ear disease by insurance companies, but in illustration of my point let me cite a recent experience. About a fortnight ago a lady, the subject of middle-ear suppuration, involving the attic and the antrum, of some thirty-five years' standing, was advised to undergo a radical mastoid operation. Before acting upon the advice she consulted me. Whilst I fully agreed with her that she had been able to go through thirty-five years of life without the operation, and that possibly she might be able to go through another thirty-five years without it, at the same time, in the circumstances, I thought she had had sound advice given to her, and I advised her to submit to the operation. There was some hesitation, and in order to make my point clear to her I mentioned that her position amounted to this, that no life office would put twopence upon her life until the operation had been done. The reply was, "Oh, you are quite wrong, doctor; I have already paid two premiums." "And in what office?" I inquired. The office was one of the best in the kingdom. I further inquired whether she had disclosed the fact that she had been the subject of ear disease for the greater part of her life, and the reply was: "Oh, yes; I mentioned that in my paper." "Did they examine the ear?" "Oh, no!" Well, accepting those statements, personally I should be very sorry to be insured in the same office.

The environments and the social position of the candidate have to be taken into account as of some importance in life insurance when suppurative disease of the ear may be a factor in accepting or rejecting a life. Speaking generally, and excluding the more serious forms of suppurative disease to which I have drawn attention, the well-to-do can be more readily accepted than those who through the harshness of circumstances cannot give up the time for the treatment of the disease; but at times, even amongst the well-to-do, whilst one hour in the day would be given up gladly to the arrangement of a coiffure, the cession of five minutes of life to the purification of a fetid ear would be grudged. Such are the difficulties one has to contend against in advising and protecting a life insurance office.

The examination of candidates for the public services, and more particularly for the Civil Service, calls for even

greater attention to deafness and diseases of the ear than in the case of insurance against accidents and life. Whereas some forms of deafness and disease of the ear would not preclude a candidate from being accepted for insurance, the same should, as I have already indicated, be grounds for rejection of the candidate for employment in any public service. Further, attention should be paid not only to existing deafness or ear disease, but also to any factors potential to the causation of such defects. In this matter, the remarks by our President, Dr. Edward Law, in his opening address, drawing attention to the importance of paying attention to the nose and the naso-pharynx, and thereby getting down to the portal of entrance and bed-rock of many aural affections, are most applicable. Altogether, apart from actual deafness and the potentialities for its development, nasal obstruction is a serious detriment to a public servant in carrying out work which calls for well-sustained and concentrated attention. The advice given to a drowning man to shut his mouth and save his life has been most aptly paraphrased into "shut your mouth and save your brain" as a sound piece of advice for all in all stations of life. When the British Medical Association met at Exeter I was included in a small party for which special permission had been given to visit Dartmoor Convict Prison. I was impressed by the remarkable absence of mouth breathers amongst the inmates, and the doctor informed me that there was little or no ear disease in the institution. Free nasal respiration was no doubt responsible for their alertness of thought and for their fate. The impression left in my mind was that one had to be a brainy person to become an inmate of that institution.

As regards the bearing of deafness and ear disease on forensic cases, this part of our discussion is obviously concerned mainly with cases of malingering. For example's sake, take the case of an individual seeking to recover compensation for alleged deafness resulting from an accident. Here the ingenuity of the aurist may be taxed to the utmost to detect the low cunning of the individual. Doubtless other points in relation to forensic cases have occurred to some of you, and I should be glad if you would mention them in the course of the discussion.

Finally, coming to the choice of the means of earning a livelihood. This part of the subject can be considered usefully, I think, under two headings: Those cases in which there is a family tendency to deafness, and those cases in which the patient is already deaf. As regards the former, there are certain occupations involving great strain upon—one almost might say concussion of—the organ of hearing, such as the firing of large guns, boiler making, and similar occupations, which should be avoided. Then there is a sociological aspect of the matter, such as matrimony, which, when followed by pregnancy, is liable to bring out a latent form of deafness or to intensify a pre-existing deafness. In such a matter one can only advise—one must not dictate—but in advising it is as well to bear in mind that matrimony is not always followed by pregnancy. In cases in which the patient is already deaf the choice of a means of earning a livelihood will, naturally, in a great measure be decided by the degree of deafness, and so I need not weary you by elaborating that point. It follows that a person with suppurative ear disease would be well advised not to seek a dirty or dusty occupation. I would only mention that the most marked deafness need not be the means of preventing the earning of a livelihood; on the other hand, it may be of considerable assistance in doing so. There is money to be made in not hearing too much. I am not going to tell you tales about intentional deafness, but I can call to mind an old fellow with marked deafness who used to help me in days gone by with my research work. He excelled in photographing microscopic specimens. I placed the specimen under the microscope at the exact spot to be photographed. Not a word was spoken, he looked through the microscope, the specimen was removed, and was returned to me with the photograph as required. After his death I employed another photographer, also advanced in years, but not in deafness. He did a great deal of talking about what he was capable of doing, but he never did it. Another old fellow, also deaf, assisted me in literary research. He was so deaf that other people realized that it was useless to interrupt him at his work, with the result that my work was rapidly carried out and carried out well.

Nine-tenths of what is said in this world might be left unsaid without the world being left any the poorer. The demands made upon the organ of hearing are far too exacting. A little deafness is at times helpful. Reverting again to my visit to Dartmoor Convict Prison—and here incidentally let me mention, as bearing upon forsenic cases, that there is no opening there for an ear, nose, and throat doctor—I was much impressed by the amount of difficult technical work that could be done, and done well and rapidly, under the silence system. In the wheelwrights' shop I witnessed two of the inmates making a cart. The work necessitated co-operative movement in clamping and fixing the parts. Not a word was spoken by mouth, but much was said by the eye, and the work proceeded with a rapidity that outside those grey walls would have aroused the indignation of any trade union.

Without stopping to discuss genius and insanity, or sanity and ingeniousness, I left Dartmoor with the impression that the difference between a lunatic asylum and a convict prison, broadly speaking, was the excessive talking in the former and the remarkable silence in the latter, and that the remarkable silence was far more conducive to good and useful work, even in the presence of insanity, than excessive talking. I was so impressed by the advantages of the silence system that I contemplate introducing it into my hospital clinic, where silence would be so helpful in testing hearing. Any one desirous of making a remark would be required to hold up the right arm above the head until the sign to speak were given. That would be wearisome, and the would-be speaker would start thinking before commencing to speak.

Lastly, as regards the lessons taught by this study of the economies of deafness. Deafness and its attendant hindrances would not be so prevalent to-day but for the support which it has received from the medical profession and the public in the past. The levity with which ear disease and impairment of hearing have been treated in childhood must be held in large measure responsible for the sad awakenings and disappointments in after-life. Further, the subject teaches us that reliable statistics are sadly needed to enable us to speak with confidence on the several matters which we have under discussion. Altogether apart from the questions before us, it would be most instructive to learn the fate of the cases of old suppurative disease of the ear, and also of the non-suppurative cases. We seldom see in hospital suppurative disease of the ear in advancing life, or, to put the matter more correctly, such cases that come under our notice are for the most part under 35 years of age. I gather that that is about the age at which life insurance is more largely effected. We may therefore assume that the cases of middle-ear suppurative disease by the time they are submitted for life insurance have given a good deal of indication of how they intend to progress. It would be a most useful piece of work were the special hospitals and the special departments for diseases of the ear in general hospitals in London and the provinces to co-operate in compiling collective statistics to help us to speak with authority to life insurance offices and to similar bodies.

DISCUSSION.

The PRESIDENT thought that applicants with otorrhœa should be rejected until the discharge had ceased and all symptoms disappeared for at least six months. The dangers of bathing and the recurrence of suppuration must be borne in mind when an obsolete perforation was discovered in a proponent. Exostoses and other permanent contractions of the external auditory canals were a risk, especially in patients who travelled abroad and lived away from expert surgical assistance. Persistent deafness and vertigo were, in some cases, sufficient to call for an increased premium. What was their bearing on the Employers' Liability Act? Vertigo was frequent after head injuries, and he was sorry that Dr. Bárány was not present as he might possibly have given them a vestibular test for vertiginous malingering, which was probably more difficult to diagnose than assimulated deafness. The choice of the means of earning a livelihood was a most important and difficult question. Speaking generally, he always advised parents to select for a deaf child an occupation or profession in which the sufferer was likely to be eventually the master and not the servant. Surely, if deaf, it were

better to be the superior officer rather than the subaltern or private, or to be the judge rather than the prisoner, and the same referred to the more humble walks in life. Deafness was less irksome if the sufferer, to use a colloquial slang, was in a position to boss the situation.

Mr. Macleod Yearsley (London) said that as regards otosclerosis, the question of insurance was one to be considered from a general point of view, since these subjects were so frequently sufferers from some general autotoxaemia, usually of intestinal origin. The question of insurance against accident in extreme deafness was one of which often too much was made. It must be remembered that these persons were more careful than hearing persons in the avoidance of street accidents. In the case of life insurance in old suppuration, it had always been his (the speaker's) system to consider the life a good one when there had been no fresh suppuration for at least seven years.

Dr. Jobson Horne, in his reply, said that Dr. Albert A. Gray had endorsed his views that a dry perforation of the ear should not be regarded as a ground for rejection for insurance. The speaker in the matter of insurance against accidents emphasized the importance of ascertaining whether giddiness accompanied the deafness. For life insurance an absence of discharge from an ear for seven years would be a fairly good test, but unfortunately it was most difficult to obtain a reliable history on that point. With reference to exostoses of the meatus affording an additional risk, the speaker had included that condition under the general heading of any obstruction preventing a free escape of the discharge. Suppurative disease of the ear, with vertigo and residence away from skilled assistance, called for an increased premium. In the matter of forensic cases, the tests for vertigo in cases of malingering would be of considerable value. Their President, Dr. Edward Law, had gone to the crux of the question of the selection of an occupation for a person who was deaf, when he said, that one so afflicted should follow an occupation in which he was likely to be eventually the master.

DEMONSTRATION.

Mr. Butlin, President of the Association, exhibited a hearing apparatus which he had been using with great advantage for several months past. It consisted of a concave receiver with a hole in the centre, in which a parabola was fixed. From the hole two tubes conveyed the sound to the ears, where the ends were adapted and fixed like the ends of a binaural stethoscope. The receiver and parabola were the invention of Mr. Sydney Scott (Assistant Aural Surgeon to St. Bartholomew's Hospital) and of Dr. Womack (Lecturer on Physics to the same School). But the binaural arrangement and the placing of the receiver at the back of the listener instead of in front had been carried out on the suggestion of Mr. Butlin. The instrument was made by Messrs. John Griffin and Sons, Kingsway, W.C., who were still experimenting and modifying some parts of the apparatus, particularly those relating to the use of it in public and private places.

DISCUSSION ON AURAL TUBERCULOSIS IN CHILDREN.

OPENING PAPER.

By William Milligan, M.D.,

Aurist and Laryngologist to the Royal Infirmary; Surgeon to the Hospital for Diseases of the Ear; Lecturer upon Diseases of the Ear, the Victoria University, Manchester.

[*Abridged.*]

The exact frequency of tuberculous otitis media is difficult to estimate, for the reason that so far we know very little about the incubation period of tuberculosis, and whether it arises from an infection which may enter the body at any time of life, and by one or other channel, or whether it is the ultimate development of an infection which has obtained access during the milk drinking period of life. Certain it is that, so far as infection of the middle-ear cleft is concerned, the vast proportion of cases of primary tuberculous otitis media occur in infancy and childhood. By many authorities the primary origin of the disease is considered to be rare. To this view I am unable to subscribe, the result of my observations tending to show that in infants and young children it is distinctly common.

While not denying for one moment its comparative frequency as a complication of pulmonary phthisis, especially with cavitation, it must be borne in mind that pulmonary phthisis in young children is rare and cavitation exceptional. From this it might be deduced that the disease was rare in infants and young children. The very reverse is, however, the case, tuberculosis of the middle-ear cleft occurring in my experience at least more frequently in infancy than at any other period of life and showing a tendency to diminish after the fourth year.

When due to blood infection it may start in the cancellous tissue of the petro-mastoid, when to inhalation or ingestion of tuberculous material in the mucosa of the middle-ear cleft, the latter pathway being in my opinion in children the more frequent of the two. Detailed histological observations of the early stages of primary tuberculous otitis media are not, however, very numerous. This is due in part to the subtilty of the disease and in part also to its being so frequently complicated with suppuration which masks its real nature. It should be borne in mind that the tubercle bacillus is not a pyogenic organism *per se*, and that, therefore, when discharge from the middle ear is definitely purulent organisms other than the tubercle bacillus must be held responsible. The essential feature of any tuberculous lesion, whether of mucous membrane or of bone, is multiplication of epithelioid cells (endothelial and perithelial) which in course of time completely replace the normal elements of the structure. The foci or tubercles thus formed, owing to absence of blood vessels, caseate and die.

Mingled with these epithelioid clusters are giant cells formed either by fusion or by nuclear multiplication without cytoplasmic division. Bacilli are for the most part to be found in the peripheral zone where epithelioid elements and lymphocytes intermingle. They are, however, comparatively seldom found in "giant cells." In any pure tuberculous infection active destruction of tissue is never frequent.

When, however, the process is complicated by the presence of pyogenic bacteria, as is generally the case, leucocytes are numerous, both in the inflammatory focus and in the discharge. An uninfected tuberculous discharge from the ear has certain definite characteristics. It is of a thin watery and for the most part of an odourless character, containing white or grey granules or flakes. Lymphocytes are invariably abundant while leucocytes are relatively few and granular and possess pale and fragmented nuclei. Giant cells may as a rule be found if searched for in the tuberculous area. Some difficulty may arise in definitely identifying the tubercle bacillus from the fact that other acid-fast bacilli are also present at times in discharge from the ear, such as certain streptothricial forms, the *B. subtilis*, *B. butyricus*, etc. These organisms differ, however, from the bacillus of tubercle not only morphologically but also by their staining properties.

The changes induced as the result of the deposition of the tubercle bacillus within the mucosa of the middle-ear cleft vary according to whether the morbid process runs an acute or a chronic course. In acute cases tubercles are numerous and break down at an early stage, with a resulting loss of tissue. If deposited upon the membrana tympani perforation is prone to take place at an early period of the disease, followed by the extrusion of pale, oedematous, and succulent granulation tissue. From the fact that two or more tubercles are often deposited upon the membrane multiple perforations are not uncommon, while a coalescence of several perforations leads to extensive loss of tissue. When tubercles are seen upon or through the membrane, they appear as sharply-defined pearly-grey spots surrounded by an uninflamed mucosa.

Although acute tuberculous infection of the tympanic mucosa undoubtedly occurs, the chronic type of disease is much more common and more important from a clinical and practical standpoint. The deposition of tubercle bacilli in the muco-periosteum of the antro-tympanic cavity frequently leads at quite an early stage to infection of the underlying bone and to subsequent cario-necrotic changes, often extensive and as a rule quite painless.

Accompanying this cario-necrosis there is at times an exuberant production of pale granulation tissue which, if microscopically examined, may show areas of caseation, giant cell formation, etc. Progressive cario-necrosis leads in time to exposure of the dura mater, the facial nerve, or the contents of the internal ear. In fact one of the very early and one might almost say pathognomonic symptoms of tuberculosis of the middle ear is the appearance of facial paresis or paralysis.

The extensive destruction of the tympanic mucous membrane which accompanies all tuberculous middle-ear lesions leads to infection of the ossicular chain with subsequent exfoliation of one or more ossicles. In fact in no other type of middle-ear disease are the ossicles so frequently infected and destroyed. So much is this the case that Haike[1] considers caries of the foot plate of the stapes to be a pathognomonic symptom of tuberculosis.

Tuberculous disease shows also a marked predilection to attack young and growing bone. So far as the petro-mastoid is concerned the possibility of injury—for example, the use of forceps during delivery—acting as an exciting cause should not be forgotten. The amount of painless destruction of the temporal bone often with no external evidences of its presence is at times remarkable. In several cases coming under my observation *post-mortem* examination has revealed almost complete destruction of the cancellous tissue of the petro-mastoid upon both sides, a mere shell of compact bone remaining upon which the middle fossa is poised.

In infants and young children destruction of bone is generally greater than in adults. Sequestra may involve such important structures as the Fallopian aqueduct, the cochlea, the semicircular canals, etc.

Erosion of the outer table of the pars mastoidea is, in my experience, not of such frequent occurrence in tuberculous as in non-tuberculous cases, the tuberculous disintegration showing a peculiar affinity to attack the cancellous rather than the compact portions of the temporal bone. On the other hand, however, I have met with many cases where, after making the post-aural incision, the cortex was seen to be perforated and a large fistula found filled with a creamy white material of the appearance and consistency of putty. From the complete absence of external signs and symptoms it would appear as if the periosteum offered greater resistance to the spread of disease than the bone itself. Perforation of the inner wall of the mastoid process and the formation of an abscess under the deep cervical fascia, Bezold's mastoiditis, I have found to be comparatively rare.

Early enlargement of the periauricular glands is peculiarly characteristic of primary tuberculous otitis media, and is in many cases the first definite objective indication of disease.

Those first attacked are the mastoid glands, then the deep glands of the posterior triangle, and finally the parotid and retropharyngeal. Sections of these enlarged glands reveal the presence of such changes as the formation of tubercles, giant cells, and areas of caseation.

In course of time the infective process spreads to surrounding glands, until large masses are formed, often matted together by intercurrent attacks of periadenitis, and exhibiting on section the various stages of degeneration, caseation, suppuration, and even calcification. So long as degeneration and breaking down has not taken place, they act as a first line of defence, preventing the dissemination of bacilli, and hence, for a time at least, serve a useful purpose.

Infection of the meninges, the result either of direct extension of disease or as part of a general miliary tuberculosis, is not uncommon. In my experience the route of extension is most frequently by way of the internal ear to the pia arachnoid meshes of the posterior cranial fossa, although it may also result from organisms passing through the lymphatic channels of the unossified petro-squamosal suture.

The occurrence of a tuberculous brain abscess is very rare. When an intracranial abscess is found complicating tuberculous otitis media it is almost invariably of pyogenic origin.

Channels or Avenues of Infection.

The avenues along which tubercle bacilli travel to effect an entrance into the middle-ear cleft are:

1. Aërial—air passing up the Eustachian tube and depositing bacilli upon its lining membrane—respiratory tuberculosis.
2. Lymphatic—along various lymph channels leading from adjacent tuberculous foci.
3. Vascular—along blood vessels, following the entrance of bacilli from the respiratory or digestive canals.
4. Through the lymphoid and along the subepithelial collections of lymphoid tissue which exist in such abundance in the pharynx and naso-pharynx, and also around the lumen of the Eustachian tube, bacilli being carried inwards by means of leucocytes and often without any demonstrable lesion of the epithelium—aëro-lymphogenous.
5. From the entrance of bacilli through a perforated membrana tympani.
6. Through erosions of the dermic lining of the external auditory meatus.

The most common route of invasion—in adults, at any rate—is by way of the respiratory system. I am inclined to think, however, that the importance of ingestion tuberculosis is, in this country at least, somewhat underrated, and that the lymphoid tissue constituting Waldeyer's ring is a most important portal of entry.

The fact also must not be overlooked that many cases of primary tuberculous mastoiditis in infancy are the direct result of a blood infection.

In infants and young children, among whom cases of primary tuberculosis of the middle-ear cleft are most frequent, I believe, as the outcome of observation extending over fifteen years, and including the records of a large number of clinical cases and *post-mortem* records, that one of the most frequent avenues of infection is from the entrance of the bacillus through the pharyngeal and naso-pharyngeal mucosa, and thence along the subepithelial lymphatics and conglomerations of adenoid tissue to the middle ear. Assuming this to be true, how is the entrance effected? My theory is that the bacillus is swallowed with the milk upon which the child is fed, that the regurgitation of food, which is so common in young children, forces portions of the now semi-digested milk into the tonsillar crypts, the naso-pharyngeal cavity, and the neighbourhood of the Eustachian tubes.

As is now well known, the bacillus has the power of penetrating the mucosa, leaving it intact, and so of gaining an entrance into the submucous lymphatic plexuses. This theory is, to my mind, substantiated from the fact that I have found on section tuberculous adenoid tissue around the Eustachian tube from its naso-pharyngeal to its tympanic orifice. It is also possible that the regurgitation and suction movements of the child, by causing a negative pressure in the post-nasal space, initiate aërial currents which carry bacilli towards the tympanum.

In a few of my cases of tuberculous otitis media occurring in infants reared upon the bottle, and where no family history of tuberculosis was obtainable in either parent, I have carefully investigated the source of the milk supply, and in three instances have found that the little patients were being reared upon milk from cows possessing tuberculous disease of the udder.

While attaching very great importance to this particular mechanism of infection I also believe that a large number of patients are aërially infected. If one considers for a moment the surroundings of the great majority of cases of tuberculous otitis media, the vast proportion being hospital patients often from the poorest districts of our large cities, one cannot help being struck by the extraordinary ignorance of parents in the matter of the clothing and the feeding of their offspring, and in the provision of fresh air in the often overcrowded sleeping rooms where other tuberculous contacts may be sleeping. The mixing also of large numbers of children, often with running ears, or with ears to which semi-desiccated crusts of discharge are adherent, or ears stuffed with highly septic and decomposing pledgets of cotton-wool, in school-rooms not always particularly well ventilated is, in the light of our present-day knowledge, almost certain to be the means of disseminating disease, and of infecting other children whose powers of resistance are incapable of withstanding bacillary invasion.

Symptoms.

I know of no one particular symptom, subjective or objective, which is pathognomonic of tuberculous otitis media. Certain signs and symptoms, however, taken collectively, make up a picture which the aural surgeon has little hesitation in pronouncing as typical of tuberculous infection of the middle-ear cleft. These symptoms are the painless onset of the disease, the absence of inflammatory reaction, the frequent presence of two or more perforations,

the early appearance of enlarged periauricular glands and facial paralysis.

The painless onset of the disease is in marked contrast to the acute and painful course of a pathogenic infection of the middle-ear cleft. In no other middle-ear lesion, sarcomatous disease of the tympanic mucosa excepted, is the complete absence of pain so marked a feature. In a series of cases examined with special reference to the presence or absence of pain, the onset of the disease was apparently quite painless in 85 per cent. This anomaly is by no means easy of explanation, but is usually said to be due to the very slow and insidious destruction of tissue and terminal filaments of the sensory nerves of the part.

Should a coincidental pathogenic infection exist at the same time, giving rise to acute swellings, pain of a more or less severe character may be present. In many cases two, and sometimes three or four, perforations are visible, while at times they coalesce, forming one large perforation occupying the greater portion of the membrana tympani. Prior to the stage of perforation, the tubercles, to whose breaking down the perforation owes its origin, may be seen upon the membrane or upon the mucosa covering the pars promontoria in those cases where the membrane is peculiarly translucent. In the ordinary type of case, which runs a chronic and asthenic course, the membrane appears pale and oedematous, and the edges of the perforation grey, inactive, and flabby. Where the greater portion of the membrane has been perforated the exposed inner wall of the tympanum is frequently found covered by oedematous granulomatous tissue, which upon microscopic examination shows evidences of active tuberculous changes. To this particular objective appearance I attach considerable importance, the more especially when the underlying bone is found to be carious.

The presence of a perforation in the postero-superior segment of the membrane, of painless origin and unaccompanied by sthenic symptoms, is regarded by many observers as pathognomonic of tuberculous otitis media. In my opinion there is in all cases of tuberculous infection of the middle ear with perforation an absence of that distinct inflammatory reaction so invariably seen in cases of phlogogenic origin.

Reference has already been made in considering the pathology of the disease to the fact that early and extensive enlargement of the periauricular glands is almost constant, and I would here state that in several cases I have found glandular enlargement to be the first objective indication of the disease, before even perforation has taken place and prior to the occurrence of facial paralysis.

Facial paralysis is not only extremely frequent but is also met with at a very early stage of the disease. In a series of tuberculous cases which I have collected it was found in 65 per cent., whereas in an equal number of non-tuberculous cases it was found in only 2 per cent. In another series of tuberculous cases collected by Paul Matthews it was found in 33 per cent., while in 658 consecutive cases of non-tuberculous otitis media collected by our *confrère*, Richard Lake, it was found but four times. Whatever the exact percentage may be—whether 30, 40, or 60 per cent.—the above figures are very striking, and tend to substantiate Grimmer's contention that its presence may be regarded as almost pathognomonic of tuberculosis in cases of chronic otorrhoea.

In infants and young children it is somewhat difficult to detect minor degrees of facial paresis owing to the absence of lines and folds upon the face and owing to their inability to whistle.

The almost invariable presence of caries or cario-necrosis in tuberculous otitis media serves to explain the frequency with which facial paresis or paralysis is met with. The position of the Fallopian aqueduct and its frequently incomplete ossification renders it liable to attack, with consequent erosion and exposure of the facial nerve. The resulting neuritis may come on quite suddenly, and may involve the whole thickness or only a portion of the nerve trunk.

Extension of disease to the pars petrosa by way of the fenestrae, or erosion of the promontory, leads frequently to early implication of the static or acoustic segments of the internal ear. The insidiousness of the process, however, prevents as a rule the occurrence of symptoms of the Ménière type. Severe, if not complete, nerve deafness is, however, very common.

The Discharge.

The discharge from the middle ear is, as a rule, copious, thin, and sanious. It is frequently extremely fetid, owing partly to its origin being from broken down and carious bone, and partly from secondary infection with putrefactive organisms—for example, the *Bacillus butyricus*, *Spirochaeta foetida*, etc—which gain access through the perforated membrane. When a pyogenic infection is superadded, as frequently occurs at an early stage, it is thick, muco-purulent, and curdy. The presence of blood in the discharge is due to the existence of exuberant granulations associated with osseous lesions. If a droplet be rubbed between the fingers it imparts at times a gritty sensation from the presence of spicules of bone.

Diagnosis.

A diagnosis of aural tuberculosis is by no means always easily made. The various clinical signs and symptoms already detailed are highly suggestive of the tuberculous nature of the disease. To verify the diagnosis it is, however, necessary to discover the bacillus in the discharge from the infected middle-ear cleft, or in tufts of granulation tissue or portions of diseased bone removed by operation or exfoliated by disease, or to produce experimental tuberculosis in animals inoculated with products from the diseased ear.

The finding of bacilli in the discharge from the ear is admittedly hard, partly on account of the small number which may be present, but more particularly on account of the frequent presence of other acid-fast bacilli and the difficulty of distinguishing them from the bacillus of tubercle.

A more certain method of diagnosis is the examination of portions of tufts of exuberant granulation tissue removed from the depths of the tympanum. Such tufts show at times evidence of active changes—for example, giant cells, areas of caseation, bacilli, etc. The most exact and reliable method of diagnosis, however, with which I am acquainted is the inoculation of guinea-pigs with portions of bone or granulation tissue removed from the advancing edge of disease. Either the subcutaneous or the intraperitoneal method of inoculation may be adopted. My own observations have been mainly confined to subcutaneous inoculations.

Prognosis.

In all cases a guarded prognosis should be given. In the primary form it is more favourable than in the secondary. The death-rate is certainly high—in my experience being nearly 50 per cent.—and even if a fatal issue does not result, the difficulties encountered in effecting a complete arrest of the disease are great. Age incidence is of the utmost importance. The younger the patient is when infected the greater the risk and the more rapid the spread of the disease. In hospital patients the prognosis is distinctly worse than in private patients, while the possession of a tuberculous family history adds greatly to the gravity of the outlook.

The greater the area of glandular involvement, but not necessarily of glandular enlargement—I mean in the gross and palpable form—and the earlier the onset of facial paralysis, the worse the prognosis. Early implication of the labyrinth is also an unfavourable omen.

The virulence of the bacilli present in the discharge or in tufts of exuberant granulation tissue, as determined by the results of the experimental inoculation of animals provides us with a fair means of estimating the severity of infection. The almost constant presence of cario-necrotic bone lesions and their well known rôle in the production of miliary tuberculosis in children accounts to some extent for the high mortality. The prognosis in secondary infections—especially in phthisical patients, where there is frequently a rapid destruction of tissue, largely the result of a superadded streptococcal infection—is most unfavourable.

The unsatisfactory results of treatment must also be considered in our estimate, for it is undeniable that many patients exhibit practically no reparative power, and succumb either from a generalized blood infection or septic complication.

Treatment.

Unfortunately the treatment of the majority of cases is begun too late, and this I believe is due to the insidiousness

of the process, and to the complete absence of pain. Moreover the tuberculous nature of the disease is often not suspected until dissemination has taken place, or until it is so advanced as to render all attempts at its removal futile. In acute cases no time should be lost in establishing and in maintaining free drainage from the posterior end of the middle-ear cleft. The provision and maintenance of efficient drainage is of immense value, and if supplemented by the judicious injection of tuberculin may bring about an arrest of the disease. As a rule, however, cases are well established before resort to advice is sought. Under such circumstances our great aim should be to remove infected bone and to provide efficient drainage. How this is accomplished does not seem to me of so much importance as its accomplishment. I am in favour of free removal of bone; and, seeing that the facial nerve at this stage is so frequently paralysed, and that there is practically no hope of preserving the ear as an organ of special sense, it appears to me the more widely we operate, the better are the chances of arresting the disease. In other words, in order to save life, we are justified in ablating the sense organ. I am in the habit now of exposing as much of the dura as possible, of removing the labyrinth, and of rather welcoming a view of the internal carotid artery than otherwise, believing that the greater the amount of temporal bone removed the better the chances of recovery.

As the great majority of the children suffering from aural tuberculosis are in a more or less debilitated condition and possess a low opsonic index, such extensive surgery is only to be accomplished by operating in stages. Enlarged glands I purposely leave for a time at least, believing that so long as they are not broken down they act as a first line of defence in preventing dissemination, and hence fulfil a useful purpose. On the other hand, when the infection is a spreading one or when the enlarged glands commence to caseate or suppurate, efforts should be made to assist immunization.

Speaking generally, local treatment—by which I mean irrigation with antiseptics and the employment of antiseptic lotions—is practically valueless, and has never in my experience, even in early and acute cases, effected a cure. Removal of adenoid vegetations, in such cases themselves frequently tuberculous, and of enlarged tonsils should be effected as a preliminary to any other form of treatment.

Seeing that every individual who has contracted tuberculosis is capable of conveying it to others, the question arises how far it is justifiable to allow such children to mix with others, especially in school where large numbers are collected together, often in small and not too well-ventilated class-rooms.

To summarize my belief, it is:

1. That aural tuberculosis is of far more frequent occurrence than is usually supposed.
2. That an early and accurate diagnosis of the underlying factor in the production of suppurative otitis media is essential from a therapeutic, prognostic, and sociological point of view.
3. That children suffering from tuberculous otitis media should be segregated and every endeavour made to raise their powers of resistance.
4. That local authorities should be appraised of the great danger to life from an impure milk supply, and that means should be adopted to secure efficient supervision of dairy farms and creameries.
5. That notification of tuberculosis, in whatever form it occurs, should be made compulsory.

DISCUSSION.

The PRESIDENT (Dr. Edward Law), after expressing the Section's appreciation of the paper, said that aural tuberculosis in childhood appeared to be of more frequent and of greater moment than was usually surmised. The prophylactic war-cry should evidently be "pure milk and a satisfactory hygienic environment."

Mr. WESTMACOTT (Manchester) said he had examined cases at the Children's Hospital, Manchester, for the past two years more carefully owing to request for information on this subject by school medical officers. Out of 1,500 cases in the past year he found 31 cases of undoubted tubercle of the ear—that is, 2 per cent. Of the 31 cases the discharge showed tubercle bacilli in only 2 instances, in the other cases a mixed infection was present of streptococcus and staphylococcus, and in others of either of these organisms alone, and in two cases of streptococcus and pneumococcus. More attention should be paid to the cases where the mother stated that the baby in arms put the hand to the ear and cried, more especially at night. Frequently no visible aural disease could be found, but he advocated watching the cases for months, as there might be early tubercle present in the bone. In cases of mastoid tubercle, other tuberculous bone lesions in shaft or joint were present much more frequently than alimentary or respiratory tuberculosis. Meningeal complications were due to saprophytic organisms or to that secondary tuberculous meningitis which so frequently ended the life of children suffering from joint or bone tubercle. Sequestration following tuberculous disease of the temporal bone he had seen lately in one case, a boy of 9 years; the whole squamous portion of the temporal bone had been exfoliated. In another case the whole vestibular, cochlear, and semicircular canals had been removed en masse from an old operation cavity in the mastoid; while in a third case there had been a passing of the epitympanic ring in the meatal discharge. The discharge was usually extremely irritating to the skin round the meatus, and set up impetiginous eruptions and cellulitis. The perforation in the upper and posterior segment he could not accept as being pathognomonic of tubercle, as from physical reasons any bacterial or other matter blown forcibly up the Eustachian tube towards the iter would in most instances impinge on the tympanum in this position. Tuberculous glandular enlargement he had found oftener on the left side; and this was due to the situation of the thoracic duct on that side. In many cases of tuberculous glands in the retropharyngeal region and of the neck around the under part of the ear, no ear disease at all occurred. He always opened up the mastoid process and curetted wherever the disease seemed to track, and repeatedly operated if necessary, rather than doing a formal and extensive removal of bone.

Mr. SYDNEY SCOTT (London) said that his personal experience of aural tuberculosis in children was based upon some 10 cases which he had met with at the Evelina Hospital for Sick Children or at St. Bartholomew's Hospital. In all these cases the diagnosis was established by direct histological examination or by inoculation. (Possibly other cases were tuberculous, but their true nature remained undiagnosed.) All were children under 4 years of age except one, a boy of 5 years, who already had a mastoid fistula when first seen. Several of the cases gave indications for operative treatment when less than 12 months old. In two cases the middle-ear cavity was filled with ordinary looking pale granulation tissue and there was no obvious bone destruction. As regards the invasion of the internal ear, the speaker could only recall one case of proven tuberculous labyrinthitis. This was in a girl whom he saw with his colleague, Mr. West. The disease had invaded the vestibule and destroyed the cochlea. The President had alluded to one of Mr. Scott's specimens of aural tuberculosis which was exhibited in the museum of the Association. In this case, as also in another which he examined *post mortem*, there were large caseating granulomata in the antrum on each side. The masses protruded into the cranium, forming tumours which compressed the temporo-sphenoidal lobes, but had not become adherent to the leptomeninges. Death was due to general miliary tuberculosis, with miliary tuberculous leptomeningitis, which was probably haemogenous in origin. The speaker took a favourable view with respect to the result of local treatment effected by the complete radical tympano-mastoid operation through the ordinary post-aural route, and he would not consent to treat these cases intrameatally. In no case had a second operation been necessary, and he had been interested to find that in those patients who had succumbed during periods up to three years after the operation—from accidental causes in one case or from tuberculosis elsewhere in others—the temporal bone, which had been operated upon, had remained free from any trace of the disease. As an example of the favourable result of treatment by operation, he cited that of an infant whom he had operated upon at the age of 7 months. The child was then wasted and puny, and had

purulent discharge from the left ear, a post-aural fistula leading into the antrum, an ulcerated preauricular gland and a tuberculous abscess in the neck. After the operation on the ear and lymphatic glands the child had become strong and robust, and now, at the age of nearly 4 years, he showed no sign of disease. In this case there was no family history of tuberculosis; the child was hand-fed almost from birth. The speaker attributed this success largely to the mother's undivided care in carrying out "fresh-air" principles of treatment combined with the eradication of the tuberculous foci.

Dr. Bárány (Vienna) said that his experience in the matter was the result of clinical observation only. Cholesteatoma seemed to be not rarely combined with tuberculosis in children. Double perforations of the tympanic membrane were only characteristic if they were in the anterior inferior or posterior inferior quadrant, whereas a combination of one perforation in the attic, one in the anterior inferior quadrant, or two perforations leading to attic and antrum were not characteristic. As to complications from the side of the labyrinth, it seemed to him that necrosis of the promontory, which was met with frequently in adults, was rare in children. He had seen several cases with sequestration of the labyrinth, but only one case with labyrinth fistula, in a child of 9 months. In was the youngest person in whom he had found the labyrinth fistula symptom. As to the operation, they were in Vienna as radical as possible, and they did not even hesitate to operate a second time if the first operation had not produced the desired effect. Sometimes after the healing of the wound a deadly meningitis appeared.

Dr. Dundas Grant (London) was of the opinion that tuberculosis of the ear would be more often diagnosed at an early stage if the possibility of its occurrence was kept more prominently before the mind. Many cases of apparently acute mastoiditis in very young children had a basis of tuberculosis with pyogenic infection superadded. In his experience the most common appearance of the membrane before perforation in tuberculosis was a general bulging of a yellowish-grey tint as if the tympanic cavity was obliterated by a stuffing of some sort (cheesy material or granulation tissue) without the intense redness of an acute otitis. He attached great importance to the hygienic —open-air, etc.—treatment. He did not approve of limited curettings, but advised thorough exposure and wide removal of the diseased bone. The removal of fragments of tissue for preliminary microscopic examination could be safely effected by means of Hartmann's minute punch forceps. The antiformin method of disintegrating small fragments for double-staining might be found useful. He had seen good effects from the application of methyl violet (pyoktanin) either in the tympanum or in the osseous wound.

Dr. Jobson Horne (London) fully agreed with Dr. Milligan that in infant life the disease was primary in origin, or, if not primary in origin, it was, when it did occur, and an early diagnosis had been made, primary in importance. He further agreed that the ravages of tuberculosis of the ear amongst infants were far more extensive than was commonly realized, and would go further than that, and state that primary tuberculosis of the ear in children was far more frequent relatively, and far more disastrous absolutely, than tuberculosis of that organ where secondary to hopeless cases of pulmonary phthisis associated with cavitation of the lungs in adults. Reliable statistics could be based only upon cases in which the diagnosis had been conclusively established, either by detecting the tubercle bacillus in the tissue or in the discharge, or by reproducing the disease by animal experiment. For practical clinical purposes the disease presented a set of symptoms which, taken together, would justify one in arriving at a diagnosis of tuberculosis and acting accordingly, although, from the standpoint of the scientist, such cases should not be placed in the same category for statistical purposes as those in which the diagnosis of the disease had been conclusively established by finding the bacillus. Every case of aural tuberculosis sooner or later became purulent; but purulent ear disease, even in a person the subject of tuberculosis in some other part of the body, was not necessarily tuberculous in origin. In discussing the causation of the disease, he would not detain them by repeating what he had written some years ago about the part played by the adenoid tissue in the naso-pharynx, which he had spoken of as a "half-way house," and about the rôle of the lymphatic glands, which he had described as potential lines of defence and also as potential paths of general invasion. He would, however, remind them that in 1903 he had summed up the conclusions which he had arrived at from clinical and *post-mortem* observations to the effect that, in his opinion, it was a question whether tuberculosis of the ear in child-life should be regarded strictly as a form of middle-ear disease in precisely the same sense as other forms of suppurative otitis, or whether it should not more properly be grouped under the tuberculous diseases of bone. All the clinical evidence—and more than a quarter of a century ago it was pointed out that facial paralysis in a child might be the first clue to tuberculous disease of the ear—supported the view that the disease had a deep-seated origin in the bone, and the extensive ravages found already to have been made by the disease when a case was first brought under observation confirmed that opinion. At the time of operating he had found the temporal bone completely gutted, the contents a pultaceous mass, the party walls alone left standing, and the long-suffering dura mater on the point of falling in. The mortality from this disease in infant life was appalling. He therefore submitted that any reference to unspeakable symptoms in the ear by an infant should not be passed over lightly, even when upon examination no objective sign could be detected. Development of radiography might possibly come to their assistance in detecting a deep-seated deposition of tubercle in the bone at a time when surgical intervention would yield more happy results.

Mr. Mark Hovell (London) agreed with Dr. Milligan as to the importance of the supervision of milk supply, and referred to a case of a child suffering with tuberculous disease of the eye with healthy parents, living amid healthy surroundings, who was fed by milk supplied from a farm where a large herd of cows was kept for milk supply. He fully agreed that the disease should be notified, so that the impure milk supply might be traced to its source.

Mr. Hunter Tod (London) said that he agreed with Dr. Milligan on practically every point. With regard to the origin of the disease, he could not help feeling that in some cases it must be through the blood stream—for instance, in infants who had a double-sided affection, and in which at the time of operation the temporal bone was found to be extensively diseased, as if the tuberculous lesion had started primarily in the mastoid process. One of the earliest symptoms was a slight sanious discharge from the ear, of distinctive odour and of such an irritating character as frequently to cause eczema of the meatus and auricle. If with this granulations were found in the place of the tympanic membrane, tuberculous disease should be suspected. If, in addition, there was caries of the promontory, the diagnosis was practically certain. Next in order with regard to clinical symptoms came enlargement of the cervical glands, but more especially the preauricular glands; the latter he had never found enlarged in simple middle-ear suppuration. Facial paralysis was an important symptom and very frequently met with. With regard to treatment, if the case could be seen in its earlier stages, before involvement of the glands, facial nerve, or the mastoid process itself, he would suggest a trial of tuberculin, from which he had seen several good results. If, however, operation was decided on, he agreed that it should be thorough and extensive. In such cases one was often surprised that, in spite of there being no external signs of disease of the mastoid process, yet on operating the temporal bone was found to be carious and necrotic, frequently with involvement of the internal ear, which structure in tuberculous cases seemed to permit of considerable operative interference without any appreciable risk to the patient. With regard to prognosis, if the diseased area of bone could be eradicated by operation, the result was favourable. Death, in his experience, seldom occurred from the meningitis, but

if so, it was from septic infection and not from the spread of the tuberculous lesion.

Mr. WEST (London) held that the number of tuberculous infections of the ear had been greatly overstated if it applied to the class of case seen at St. Bartholomew's. Tubercle was a progressive disease, and whether diagnosed early or late was bound to declare itself. He was in the habit of submitting every case which could be held suspicious to animal experiment, and he believed that 1 or 2 per cent. would be about the figure. As to the diagnosis, he believed animal inoculation was the only conclusive method. There were, he thought, two types of tubercle of the ear—the one, of infection of the bone, the disease chiefly in the posterior parts of the petrous and mastoid; the other of the mucous membranes, apparently coming up the Eustachian tube, with the older lesions situated anteriorly. He questioned the possibility of free tubercle bacilli in the atmosphere of the naso-pharynx, so conveyed, as Dr. Milligan seemed to imply, along the Eustachian tube to the tympanum; such a supposition seemed highly improbable. Meningeal infection had been in his experience unfortunately common, not at the same time or as the result of operation, but as a much later development after the complete healing of the disease in the ear in several instances. He believed this tuberculous meningitis was due to a blood infection from tubercle in other parts of the body. But cases of direct spread through the labyrinth to the internal auditory meatus and the leptomeninges probably also took place.

Dr. MILLIGAN, in reply, said that he was quite aware his view of the prevalence of the disease might not be accepted at once. He had, however, worked at the subject for a considerable time past, and had found the cases to be more numerous than was usually supposed. He thought that Dr. Dundas Grant had hit the nail on the head when he had said that in many cases there was an original tuberculous focus which was frequently not suspected. He considered the most accurate method of establishing a diagnosis was by means of animal experiments, and until those speakers who disagreed with his statistics adopted the same methods he could not accept their conclusions. He thought one outcome of the discussion was that there was a practically unanimous expression of opinion that if operation was to be performed it should be a free and radical one. He entirely agreed with Dr. Bárány about the occurrence of cholesteatoma in tuberculous cases. He also agreed with Mr. Hunter Tod that in many cases a fatal issue was brought about as the result of a septic and not necessarily a tuberculous meningitis.

SECTION OF LARYNGOLOGY.

HERBERT TILLEY, B.S., F.R.C.S., President,

Surgeon, Ear and Throat Department, University College Hospital, London.

CONGENITAL ATRESIA OF THE CHOANAE.

By J. S. FRASER, M.B.,

Assistant Surgeon, Ear and Throat Department, Royal Infirmary, Edinburgh.

CONGENITAL atresia of the choanae was first described by Otto[1] in 1830; the condition is a somewhat rare one, and I have only been able to find records of 115 cases, many of which were insufficiently described. The atresia may be unilateral or bilateral, partial or complete, bony or membranous.

Schwendt[2] divided cases of choanal atresia into typical and atypical; in the former group he placed cases in which the occluding structure (usually a bony plate) is in a plane in front of the choanal margins, so that the boundaries of this space can be clearly recognized; in the second group he included cases in which the closure was in the plane of the choana itself or behind it. Many of these cases are membranous.

If we combine the cases collected by Haag,[3] Cohn,[4] and Kahler,[5] and add to them those recorded by Hamilton,[6] Brunk,[7] Schönstadt,[8] Paterson,[9] Ash,[10] Ard,[11] and the present case, we get a total of 108 cases; of these, 31 were males, 44 were females, and in the rest of the cases the sex is not stated; 40 of these 108 cases were bilateral, while the right side was affected in 36 and the left in only 22 cases (no statement in 10 cases). In regard to the nature of the occluding structure, this was bony in 89 cases, wholly or partly membranous in 10, while in 9 the nature of the membrane was not stated.

The symptoms, which are of course most marked in bilateral cases, are as follows: Inability to breathe through one or both sides of the nose, loss of smell, collection of mucus in the nasal cavity, and dermatitis of the upper lip, due to the constant moisture of the part. There may, in addition, be certain abnormalities, such as asymmetry of the face and body, abnormally high palate, inequality of the palatal arch (in unilateral cases), hypertrophic nasal catarrh (mulberry hypertrophy of the inferior turbinals and polypoid oedema of the middle turbinals), catarrhal or suppurative otitis media and mental defects.

Although I have only one case to add to those already recorded, I think that I am justified in bringing the condition under the notice of the Section, as I was able to obtain the specimen at *post-mortem* examination. As far as I can find, there are only three specimens of this condition in existence—Professor Heymann's, which is not one of the typical variety, Dr. Hamilton's, and my own. The history of the case is as follows:

C. A., female, aged 20, a native of Shetland, was admitted to the Ear and Throat Department of the Royal Infirmary, Edinburgh, in the absence of Dr. Logan Turner. The patient was the seventh child of a family of nine; her father died of pulmonary tuberculosis, and three of her brothers also died of tuberculosis. Dr. R. F. Russell, who attended the patient, tells me that he was acquainted with nearly all her relations, and that he neither knew nor heard of any other abnormality among them. On admission, the patient gave a history of deafness in and discharge from the left ear of many years' duration, and of occasional attacks of pain in this ear; antiseptic treatment had not been persevered with. On being questioned, the girl informed us that she had never been able to breathe through the right nostril, and that she had never menstruated. Dr. A. H. F. Barbour, who kindly examined the patient in the Gynaecological Department, tells me that the amenorrhoea was due to imperfect development of the uterus.

The patient was a well-developed but rather pale-faced girl; there was no noticeable facial asymmetry; her mental development was probably slightly below the average. The patient was *not a mouth-breather*, and her speech did not show the characteristics of rhinolalia clausa.

On examination the right tympanic membrane was found to be normal (the choanal atresia was on the right side); the left tympanic membrane showed a large kidney-shaped perforation through which the region of the promontory and niche of the round window could be seen; there was no mastoid tenderness.

The nasal septum was deviated to the right, and the right side of the nose contained a large quantity of mucous discharge; the anterior ends of the inferior and middle turbinals on the right side were slightly oedematous, and there was also slight redness (dermatitis) of the right anterior naris. The left side of the nose was roomy. After the application of adrenalin and cocaine solution it was possible to see the bony occlusion of the right choana from in front, below the septal deviation; viewed in this way the plate appeared to have a pale yellow colour, and on touching it with a probe was found to be of bony hardness. On posterior rhinoscopy the free border of the vomer was clearly seen, apparently in the middle line; the left choana was normal, while the right one was closed by a greyish-yellow plate which presented a small depression in its upper part; the choana on the left side appeared to be larger than that on the right; there were no adenoids.

On transillumination the frontal sinuses and the maxillary antra illuminated well and equally. Unfortunately no anthropometric measurements were taken during life.

The opinion formed was that the condition of the left ear did not warrant immediate operation; the patient was, however, admitted to the ward, and instructions were given that the left ear should be syringed with the intratympanic cannula. Five days later, during the use of this instrument, the patient became giddy, and, though still seated, fell slightly forwards and to the left; at the same moment the nozzle of the syringe was felt to grate on bone. The patient did not fall off her chair, but immediately became pale and giddy, and vomited; there was no bleeding from the ear.

The further history of the case is interesting, but rather from an otological than a laryngological point of view; it is sufficient to say that the patient developed symptoms of an acute infection of the labyrinth, and died from purulent meningitis, in spite of a radical mastoid operation, combined with double vestibulotomy and drainage of the subarachnoid space.

At the *post-mortem* examination the skull cap was found to be firmly attached to the dura by old fibrous adhesions; the lepto-

meningitis was most marked over the upper surface of the cerebellum. The head only was examined at the autopsy.

Examination and Measurements of the Nose.

	Mm.
Vertical measurement of choana on left side ...	19
Vertical measurement of choana on right side ...	16
Breadth of left choana at middle of posterior border of vomer	13
Breadth of right choana at same point	10
Depth from posterior border of vomer to bottom of small pit in occluding bony plate	10
Breadth of floor of left nasal cavity (measured from middle of bony septum at its base)	17
Similar measurement on right side	9.5
Vertical measurement of left antrum at level of first molar tooth...	34
Similar measurement on right side	35

The floor of the left antrum is slightly lower than that of the right, and on both sides the level of the antral floor is a little lower than that of the corresponding nasal cavity.

The septum is deviated markedly to the right. This is mainly due to the maldevelopment of the V-shaped groove in the upper border of the vomer, which should receive the lower edge of the quadrilateral cartilage; the right side of the notch is very small, and the cartilage has slipped out of it, and projects into the right nasal cavity under the mucous membrane.

The posterior end of the right inferior turbinal is absent, or, at most, represented by a slight projection on the outer wall of the nose; the right middle turbinal is badly developed as compared with the left one. Schwendt, Haag, and Kahler state that this atrophy is due to the pressure of the masses of mucus. At the level of the first molar the breadth of the hard palate—as measured from the inner margin of the gum on one side to the corresponding point on the other side (see diagram)—(C–D), 39.5 mm. The raphe is not in the middle line, and if we drop a perpendicular from it to the line mentioned above we get a measurement on the left side (B–D) of 21 5 mm., on the right side (C–B) of 18 mm. The vertical distance from the raphe to the base line (A–B) is 15 mm. The vertical distance from a point 5 mm. on the left of the raphe to the base line (G–H) is also 15 mm. A similar measurement on the right side (E–F) is 16 5 mm.

Palato-maxillary index (Flower):

$$\frac{\text{Breadth, 59 mm.} \times 100}{\text{Length, 42 mm.}} = 140\,5 \text{ (brachy-uranic).}$$

Diagram showing asymmetry of hard palate.

The conditions present in the nasal cavities, in the choanae, and in the hard palate can be best appreciated by reference to the diagrams; it is sufficient to say that the right choana is closed by a bony plate which has almost the same attachments as those described by Hamilton. About the middle of this plate, in the vertical direction, but considerably nearer to the septum than to the outer wall, there is a small pit or canal, which admits the end of a blunt probe. This small canal runs forwards, apparently, into the septum, which at this point is markedly deviated to the right. The septum behind the small depression is thin and translucent, and the bony occluding plate external to the depression is also thin and translucent, but at the point where the depression is situated the bone is thicker, as this is the spot where the occluding plate blends with the bony septum. The sphenoidal sinus on the right side is considerably smaller than that on the left.

On microscopic examination the nasal mucosa of the left olfactory region showed normal appearances, whereas that of the right olfactory region showed almost complete desquamation of the surface epithelium, and fibrous thickening of the submucous tissue. There was also on the right side considerable small cell infiltration, especially of the deeper layers of the submucosa. The mucous membrane of both maxillary antra was normal.

The fact that the two antra were of equal size is against the theory of Frers that the development of the nasal accessory sinuses is due to the pressure of the air currents in the nose (report of the German Laryngological Society, 1909).

Kahler notes that in his cases of bilateral atresia the naso-pharynx was remarkably wide, and that, partly for this reason and partly on account of the hypo-sensibility of the soft palate, posterior rhinoscopy was extremely easy.

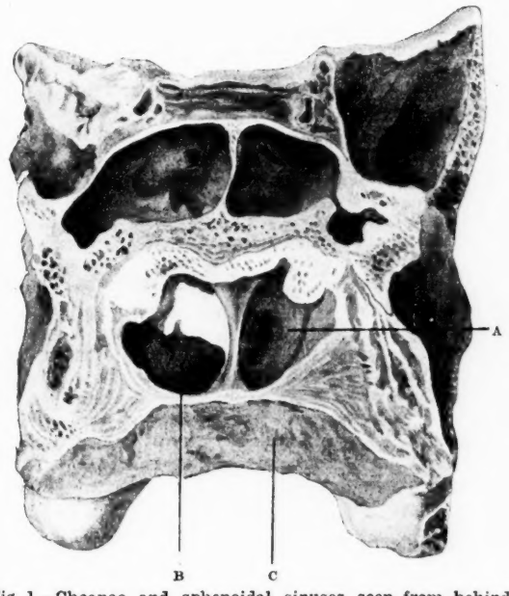

Fig. 1.—Choanae and sphenoidal sinuses seen from behind the left sphenoidal sinus is larger than the right; the left choana is broader and deeper than the right. A, Bony plate closing right choana; B, posterior end of left inferior turbinal; C, soft palate.

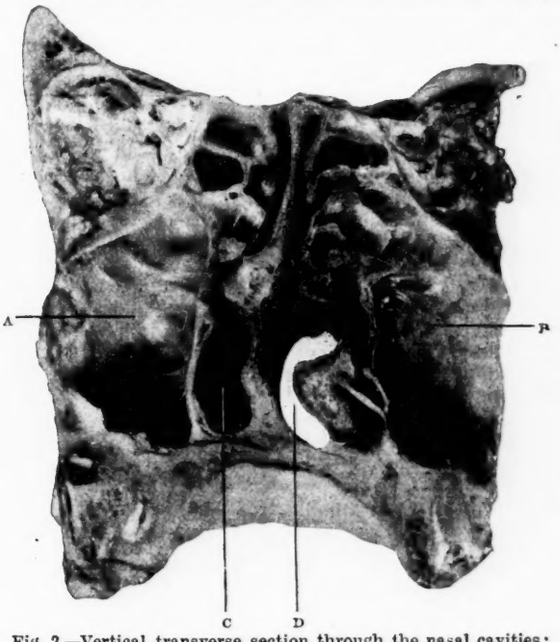

Fig. 2.—Vertical transverse section through the nasal cavities: the specimen is looked at from the front; notice deviation of septum nasi to the right (obstructed) side of the nose A, right maxillary antrum; B, left maxillary antrum; C, atresia of right choana seen from the front; D, choana of left (unobstructed) side, seen from the front.

Many cases of choanal atresia show changes in the middle-ear cleft—simple tubo-tympanic or suppurative catarrh. In the present case the ear on the side of the choanal atresia was normal, whereas the other one was the seat of chronic purulent otitis media.

There are two further questions of interest in cases of congenital choanal atresia, namely: (1) The effect of mouth-breathing on the shape of the hard palate, and (2) the developmental etiology of the condition.

1. In regard to the first of these questions we have two theories: (*a*) Siebenmann,[12] Fränkel,[13] Grossheintz,[14] Haag and Buser[15] take the view that a high palate is only part of a congenitally high and narrow formation of the facial skeleton, that is, of leptoprosopia. (*b*) Bloch,[16] Körner,[17] Waldow,[18] Alkan,[19] and Bentzen[20] are of opinion that mouth-breathing produces an abnormally high palate on account of the pressure of the stretched cheeks on the lateral part of the alveolar arch, and also because of the want of counter pressure of the tongue on the roof of the mouth. These two factors are of course due to the open mouth, and, in addition, there may be a certain amount of pressure due to the impact of the air current on the roof of the mouth. There is one other factor which may aid in the production of high palate, and that is a degree of atrophy of the nose from disuse.

Cases of congenital atresia of the choanae have been put forward in favour of both of these theories, Siebenmann and his pupils pointing to cases of bilateral atresia with a normal palate, while the Körner-Waldow school call attention to the frequency of high palate in cases of choanal atresia. Porter[21] mentions the fact that the palate was high in 87.5 per cent. of cases in which the patients suffered from congenital atresia, and mouth-breathing was present.

Brunk comes to the following conclusions on this question: (1) In cases of bilateral, complete, and long-existing choanal closure there is almost always a high palate. Since such closures are the most complete examples of continuous mouth-breathing, the occurrence of high palate due to mouth-breathing is proved. (2) Against the theory of Siebenmann that high palates are merely a part of leptoprosopia there are several weighty reasons. The frequent occurrence of leptoprosopia along with high palate is not to be wondered at, since a high palate must make a face longer.

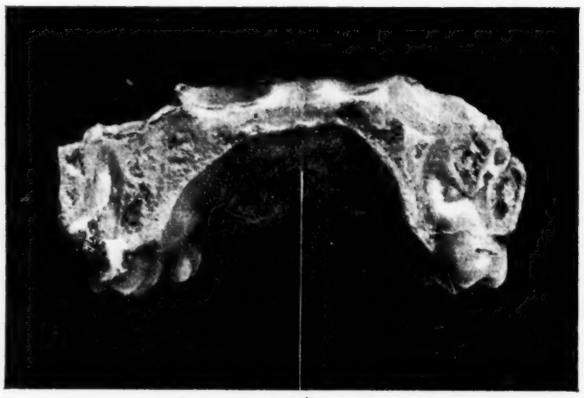

Fig. 3.—Hard palate seen from behind; notice asymmetry; the palate is higher and narrower on the right (obstructed) side. A, Raphe.

Bloch has examined mouth-breathers and nose-breathers of both types, and finds that the highest palatal index is present in cases of leptoprosopic mouth-breathers; but—and this is the interesting fact—he finds that the palatal index of chamaeprosopic mouth-breathers is higher than that of leptoprosopic nose-breathers. This fact strongly supports what is known as the Körner-Waldow theory.

Although in the present case no measurements were taken, the patient's face was undoubtedly of the chamaeprosopic type, and it must be stated emphatically that the patient was not a mouth-breather; the asymmetry of the palate is, however, very marked, and the arch is higher and narrower on the side of the choanal occlusion. This condition could not, of course, be due to the pressure of the stretched cheeks, or to want of counter pressure of the tongue, or to pressure of the air current on the roof of the mouth. The condition present in my case was by no means unusual, and in recent papers Kahler and Paterson have both called attention to the fact that the palate is higher on the side of the atresia, although the difference between the two sides may be slight. Obviously, then, we must look for another factor to account for this difference; "atrophy of the nose" from disuse has been suggested, but this is hardly an accurate expression.

We have seen that the nasal cavity in the present case is much narrower on the side of the atresia, and that the septum is deviated markedly to the right. By the failure in the formation of the right choanal opening the lateral wall of the nose on that side remained attached to the septum posteriorly, and could not fall away as it would have done had the choana become pervious: further, the dilating effect of the air current through the right (obstructed) side of the nose was lost, while it was present on the left side, and may have had an important influence in causing the deviation of the nasal septum.

If a patient with unilateral atresia of the choana is a nose-breather, and has a palate which is markedly higher on the side of the atresia, there must be some cause for the asymmetry; this cause cannot be mouth-breathing. In a bilateral case, even though the patient is perforce a mouth-breather, there is no reason why the same cause which gives rise to the higher arch on the side of the unilateral occlusion should not be at work on both sides in the formation (or malformation) of the hard palate; I therefore do not think that cases of choanal atresia (unilateral or bilateral) can be used with much success to support either the Siebenmann or the Körner-Waldow theories.

2. The last question of interest is that of the developmental etiology of the condition. There are two theories as to the formation of the nasal cavities and choanae:

(*a*) Ecker and His[22] hold that the nasal and bucco-pharyngeal cavities communicate at first and that the nasal cavities are later on partially shut off from the bucco-pharyngeal cavity by the growth inwards of the hard and soft palate.

(*b*) Hochstetter,[23] Tiemann,[24] and Keibel,[25] on the other hand, state that the primitive nasal cavities are from the first separated from the mouth and pharynx, and form a blind cul-de-sac. The floor of these primitive nasal cavities is formed by the union of the lateral with the mesial nasal process, and is made more solid by the proliferation of mesoderm between the two epithelial layers. The posterior part however, continues as an epithelial layer, and, as the nasal cavities elongate, ultimately reaches the naso-buccal membrane, which finally gives way. In this way the primitive choana is formed. In cases of choanal atresia it is possible that the naso-buccal membrane becomes permeated by mesoderm, and therefore fails to break down. Keibel has shown that in badly preserved specimens the epithelial layer which separates the primitive nasal and buccal cavities may fall off, and so give an entirely wrong idea of the development of this region. He suggests that Ecker and His must have used such a specimen, of which he gives an illustration.

Fig. 4.

Mucous membrane from olfactory cleft of right (obstructed) side of nose. × 50. Notice almost complete loss of superficial epithelium, and marked thickening of submucous tissue.

Mucous membrane from olfactory cleft of left (unobstructed) side. × 50.

In *Quain's Anatomy*, vol. i, page 152, there is a reproduction of a microscopic preparation by Bryce, showing a vertical section through the olfactory vesicles of a human embryo of 15.5 mm.; on the right side the

olfactory vesicle is still almost completely separated from the bucco-pharyngeal cavity by the naso-buccal membrane, while on the left side the membrane has disappeared and the section passes through the primitive choana.

The theory of development of the nose first stated by Hochstetter is in line with what we know as to the development of the vagina, anus, and external auditory meatus; in almost all cases of congenital atresia of the choanae the occluding membrane is well in front of the choana, and this lends support to the view that congenital atresia is due to the failure of the naso-buccal membrane to break down.

There can be no doubt that the statements of Hochstetter, Tiemann, and Keibel supply a better explanation of congenital choanal atresia than those of Ecker and His. Haag and Kahler are of opinion that the anomaly is due to persistence of the naso-buccal membrane.

Hopmann[26] regards choanal atresia as the most extreme degree of choanal narrowing. Lushka[27] and Schwendt think the condition is due to proliferation of the horizontal plate of the palate bone; while Schrotter[28] and Kahler regard it as due to overgrowth of the vertical plate, and in support of this view bring forward the fact that the lateral part of the occluding membrane is thicker than the mesial part.

Porter[29] calls attention to a fold sometimes to be found in front of the posterior nasal opening; he regards this as a vestigial structure—that is, as the remains of what was once the naso-buccal membrane, and states that a persistence of the whole of the naso-buccal membrane, results in congenital atresia of the choana.

Kahler and Brunk state that the question of the etiology of choanal atresia cannot be definitely settled till we possess a *post-mortem* specimen of the condition; Kahler does not accept Heymann's specimen as one of the typical form. There are, however, two specimens of this variety at present in existence—Hamilton's and my own. Hamilton has macerated his specimen, and describes it as follows: Septum straight; bony choanal plates are diaphanous in the centre; the bony plates are attached in front and below at the junction of the superior maxillary and palate bones; at both sides to the internal pterygoid plates; mesially to the posterior margin of the vomer; behind and above to the basilar process of the occipital bone; the septum at its base projects behind the plane of the bony plates.

While I have no objection to sacrificing my specimen if I can by this means clear up the question of the etiology of the condition, I do not at present clearly see how the matter can be settled even by serial horizontal microscopic sections of the region.

I wish to acknowledge a grant from the Carnegie Trust for the reproduction of photographs.

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DISCUSSION.

Dr. Brown Kelly (Glasgow) had had two cases of congenital choanal closure. Both were unilateral. One was that of a girl, aged 3 years, in whom the obstruction was detected by the mother. Palpation of the choanae revealed nothing abnormal owing to the congenital membrane being in front of the choanal plane and out of reach of the examining finger. The other patient was a woman who complained chiefly that in winter there was abundant discharge from the blocked side which she was unable to expel. In both cases there was marked asymmetry of the face. In the child an opening was made in the membrane and a tube passed through, but difficulty was experienced in preventing closure from again taking place. A permanent opening was obtained in the adult by means of chisel and forceps. In any case he might have to treat in future he would be inclined to remove the posterior part of the vomer by submucous resection, especially if the septum were deviated to the blocked side, and thus gain better access to the obstructing structures.

Dr. Dan McKenzie (London) related a case in which the posterior choanal partition was associated with deviated septum. After operation on the septum the osseo-membranous web was broken down with chisel and burr with perfect result.

HEADACHES IN ASSOCIATION WITH OBSTRUCTION IN THE NASAL PASSAGES.

By L. Hemington Pegler, M.D.,

Senior Surgeon, Metropolitan Ear, Nose, and Throat Hospital.

Although headaches in association with nasal obstruction have been discussed already at a meeting of this Association (Medical Section, Portsmouth, 1899), I hope that the additional evidence of my own experiences will serve both to reinforce the truth of what was then maintained, and as an excuse for briefly reopening the subject in this paper.

Headaches are such a disturbing form of slight ailment and are so common, especially amongst town dwellers, that it behoves us to study them not only for their own sakes, but because of their value as indicators of lesions lying more or less obscured from view, which will reproduce the annoyance continually until they are discovered and removed. My object is to recall the existence of regions within the nose and adjoining spaces which have been ascertained, albeit empirically, to be the seat of such lesions, and accordingly to be the foci from which the symptom of headache may emanate.

I also hope to elicit from members in discussion how far they agree with the location of such foci and the mode of production of this class of headache hereinafter suggested, but I shall be brief upon speculative questions of this nature, for they can only be answered hypothetically at best.

I employ the term "empirical," because it is only by watching the effect of certain operative measures that we have learnt the relationship between the suspected lesion and the concurrent symptom; and even now we can only speculate as to why apparently the same lesion will be so differently construed in effect by different individuals. We dare not affirm positively from objective appearances whether a gross abnormality, such as a cystic middle turbinal, is producing the headache in a given patient or not, though in such a case we should probably be correct. We are still more unsafe in predicting in the presence of a given abnormality that a recognized line of treatment will relieve an attendant headache. The fact is that we do not know why headache is the sole symptom in one patient, the subject of a nasal lesion, whereas in another the site of excitation of the headache is betrayed by a definite symptom, such as one or other of the reflex nasal neuroses; nor why in a third patient we have the familiar neuroses—sneezing or watery discharge but no headache. Again, in two patients apparently similarly blocked in both fossae by nasal polypi, one may complain of severe headache, the other of none at all. The explanation seems to be that certain independent disturbing factors must combine in an individual in order to produce the pain. Dr. Harry Campbell[1] has shown that:

> in the production of headache there are many causes at work, but it may often be cured by removing any one of them. Thus a man may have an innate tendency to migraine, be markedly astigmatic, and suffer from some nasal affection, at the same time he may be taking a highly nitrogenous diet. In such a case we may possibly cure the headache by removing any one of these factors.

He also points out the interdependence of causes in the etiology of headache; thus the obtrusive cause may be menstruation, fatigue, or nasal disease, but the more immediate factor may be the state of the eyes induced by one of these. A case in my notebook illustrates this. A school teacher, aged 29, came to me four years ago for aching sensations in the throat and constantly recurring head colds. I removed a mass of adenoids and cauterized both her inferior turbinals with benefit to the colds. Two years later she began to have pains in the back of the head, scarcely a day passing without a headache. About the same time she suffered from ocular fatigue due to asthenopia, for which a slight error of refraction was corrected and tinted glasses prescribed. In spite of this

however, the eye-strain increased and was but very little benefited by four months' rest. Some of the obstruction now recurred in the right nasal fossa, as often is the case after cauterization, so that the breathing was less efficient and sore throat was complained of again. Towards the end of last year I removed the anterior end of the right inferior turbinal and permanently cured the obstruction. The result of this has been immediate relief to the eye-strain, and many worrying ocular symptoms that before were of great annoyance have vanished. The headaches became rarer and have now entirely disappeared, only being felt after excessive strain with eye work.

In order to reduce headaches associated with nasal obstructions to some sort of classification I would suggest the following division:

I. *Referred headaches*, called by some American writers *reflex*, and apparently due simply to pressure; these include varieties of supraorbital neuralgia, rhinalgia, and hemicrania.

II. Headaches of double origin—a mixed class, showing (1) objective signs of pressure and contacts inducing referred pain, and (2) of deficient drainage and ventilation of the nasal passages, setting up headache from toxic absorption.

III. Headaches due solely to toxic absorption or toxaemia, these being attributable to deficient oxygenation of the blood, or, according to some authorities, to lymph stasis.

IV. Headaches associated with intranasal inflammatory conditions, including cases of acute sinusitis in which the pain may be attributed to exhaustion of air in obstructed accessory sinuses.

This is not a perfect classification, but one made for convenience on clinical grounds. Perhaps more than one mixed class may exist, but when a plurality of factors is in operation it is important that the predominating one should be discovered and treated.

The headache of toxaemia is attributed to the circulation of waste products in the cerebral vessels, but we need not think of the meninges in association with genuine nasal headaches.

Distribution and Character of the Pain.

There is nothing absolutely distinctive either in the distribution or location of pain arising from intranasal contacts, or from toxaemic absorption in the upper respiratory tract, by which it can be diagnosed from headache produced by toxic effects in other parts of the body.

The following hypersensitive areas, with the corresponding "referred" sites more or less remote, are modified from Roe[2]; it is not maintained that they bear a constant relationship.

Hyper-sensitive Focal Areas.	*Sites to which Pain is Referred*
Inferior turbinal and lower part of septum.	Lower portions of temporal, parietal, and occipital regions; lateral incisor teeth.
Middle turbinal, and corresponding region of the septum.	Temple; bridge of nose to parietal eminence and over the vertex towards the occiput.
Superior turbinal region.	Frontal and supraorbital region, and in and around the eye.

Thus it may be stated generally that pain from pressure or from mixed etiological factors within the upper respiratory passages is distributed somewhere above the brow-line either laterally or vertically in common with those from general causes long ago described, and that pain below the brow, on the bridge of the nose, or in the angle of the orbit is, as a rule, associated with local pressures beneath. A pure rhinalgia without discoverable cause is probably a rare occurrence.

The occipital region, so remote from the middle turbinal area, is reached by the ultimate ramification of the supraorbital division of the frontal branch of the ophthalmic.

The *character* of the pain is equally variable; a headache which is lancinating and neuralgic, or dull and pressing, constant or periodic, or throbbing and accompanied by great heat on the surface, and subsequent tenderness of the scalp, is quite compatible with nasal origin. We are also familiar with pain referred to the teeth during operations upon the anterior ends of the inferior turbinals and septum adjoining, but the fulminating and spasmodic form of toothache known as tic douloureux never has an origin within the nose. Unilateral headache is commonly called hemicrania, a term which, although now attached by some writers to one-sided neuralgias of nasal origin, must originally have been synonymous with migraine as its etymology proves. But unilateral nasal headache is distinct from migraine, and I think confusion would be saved by adhering to the former expression, and by excluding the term "hemicrania" from this connexion altogether.

From these preliminary remarks I pass to a more detailed inquiry into nasal headaches as above classified.

I.—REFERRED HEADACHES.

These are members of a group of symptoms many of which are genuine pathological reflex phenomena such as paroxysmal sneezing and rhinorrhoea, asthma, hay fever, etc., a fact emphasized by the inseparable character of the vasomotor reflex phenomena of surface congestion with heat and throbbing, that accompany the headache in some persons.

For the production of such reflexes, certain causative factors are presumed to be in operation. Tilley[12] enumerates these as follows:

1. A peculiar idiosyncrasy.
2. A special exciting cause, within or without the individual.
3. A special irritability of the afferent sensory nerve terminal.
4. An unstable condition of the central nervous system and general health.

Upon the peculiar nervous organization of the subject depends what form of nerve disturbance the focal excitation arouses—for example, whether paroxysmal rhinorrhoea or asthma, or neither of these, but headache. Here, again, the interdependence of factors comes into play—for example, the condition of the digestive organs. Roe believes that gastric irritation may set up headache secondarily, by causing engorgement of the turbinal vessels; and we know that the sufferer from nasal difficulties, in order to save himself a morning catarrh or headache, has to be careful how he indulges in the food and drink that the average diner may take with impunity. Thus nasal symptoms may serve to guide the practitioner as to where his attentions should be directed for the cure of an apparently dyspeptic headache. A knowledge of the mechanism engaged in the production of referred headache is very important; and the following hypothesis is given with the approval of Dr. Purves Stewart. (See Figs. 1 and 2 for further details.)

An excitation is produced at the peripheral extremity of an afferent—that is, sentient—nerve; say, for example, pressure upon a terminal twig of the nasal nerve, a branch of the ophthalmic or first division of the fifth, distributed on the septum. The stimulus is conveyed to the nearest ganglion or nerve centre—the Gasserian—and thence upwards through the pons to the cortex, where it is construed by the sensorium into a sensation of pain, but the sensorium refers the impression to the area of distribution of another branch of the ophthalmic—namely, the supraorbital branch of the frontal nerve, and thus the pain is felt over the brow, forehead, vertex, or occipital region. Other referred effects can be easily traced out by recollecting the branches and communications of the fifth or trigeminal nerve. Thus middle or inferior turbinal irritation often sets up a simultaneous aching in the incisor teeth of the same side, owing to a transference of the impression along the anterior dental branch of the superior maxillary division.[2]

The intranasal regions that have been specially cited by different observers as foci of reflex irritation may be enumerated as below:

Anterior ends of the inferior turbinals.
Posterior extremities of the inferior turbinals.
Anterior ends of the middle turbinals.
Middle meatal region of the septum.

But experience teaches that the sources of origin of nasal headaches cannot be limited to the definite hypersensitive foci of vasomotor reflex phenomena. In dealing with headaches we have need for a double classification—first, of the sensitive regions of origin; and, secondly, of the abnormal or pathological conditions which render them liable to set up pain.

The sensitive regions for headaches may be classed as follows:

A. The inferior turbinals.
B. The middle turbinals.
C. The septum.

A. *The Inferior Turbinals.*

The more common morbid conditions capable of exciting referred headache in association with the inferior turbinals may be classified as follows:

1. Erectile tumefaction.
2. Oedematous degeneration of mucous membrane.
3. Simple bony hypertrophy with pressure against the septum, especially by its superior free margin.

1. *Simple erectile tumefaction* is a very important source of headache on account of its frequency in our climate, and of its being so often overlooked, also on account of the readiness with which these bodies respond reflexly by turgescence to stimuli conveyed from distant organs such as the abdominal, pelvic, or sexual. They are also influenced very much by gravitation during the recumbent posture, as at night. The hollow depression in the opposing septal mucous surface, which this body creates when the engorgement is at its height, is a sign that should always be looked for, as by it latent tumefaction is unfailingly betrayed, and true though it be that the current of air on inspiration and expiration is blocked by middle

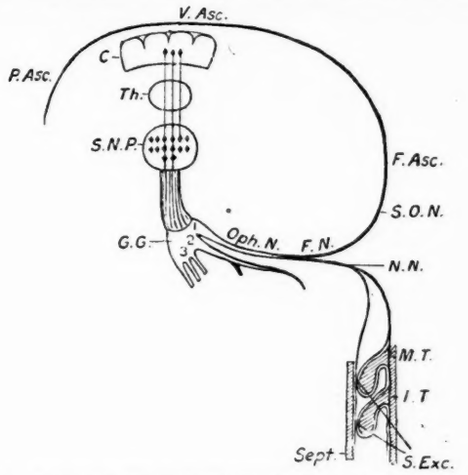

Fig. 1.—Scheme to illustrate the mechanism of "referred" pain due to pressure exerted in a turbinal region. M.T., I.T., middle and inferior turbinals, capable of pressing upon the septal wall (Sept), and irritating one or more terminal branches of the nasal nerve N.N. at the "sites of excitation," S.Exc. V., F., and P.Asc., vertical, frontal, and posterior "sites of ascription—that is, points corresponding to cutaneous terminations of the supra-orbital nerve S.O.N., to which pain is "referable." F.N., frontal nerve. G.G., Gasserian ganglion. S.N.P., sensory nucleus of the pons. Th., thalamus. C, cortex. The stimulus due to pressure is transmitted afferently from S.Exc., through G.G., S.N.P., and Th. to C; it becomes manifest as pain at Th., the opposite thalamus. As these afferent impulses from S.Exc., when excessive, may overflow at S.N.P. to the cells around which the fibres of S.O.N. terminate, the pain may be referred to V., F. or P.Asc., which lie in the distribution of S.O.N. and are familiar surface areas corresponding to peripheral terminations of sensory branches of the fifth nerve, whose centres have been affected by the overflow.

turbinal enlargements, it is obvious that tumefactions of the anterior ends of the inferior turbinals at the very portal of the nasal chambers must also greatly impede it.

There would seem to be two or more possible sources of headache from inferior turbinal tumefaction, namely, *referred*, in obedience to this condition responding to vasomotor impulses occurring during the day, and *systemic or toxic*, due to the atonic or postural tumefaction at night, that has induced mouth-breathing, and consequent maloxygenation of the blood.

2. *Hypertrophic Rhinitis affecting the Inferior Turbinals.*—By this is implied an oedematous degeneration of the turbinal mucous membrane, filling up the inferior meatus with a fringe-like appendage of polypoid growth, and terminating with a moriform hypertrophy. This condition, with attendant blockage of drainage and ventilation, furnishes a source of headache in a manner similar to erectile tumefaction, but there is a great deal more catarrh, both ante-nasal and post-nasal, in hypertrophic rhinitis.

3. *Bony Hypertrophy of the Inferior Turbinal, with Pressure of the Upper Border upon the Septum.*—If the septum is deflected slightly outwards, this condition may create a source of headaches and allied symptoms. The pressure may be presumed to act in effect like middle turbinal contact with the septum, and I believe does so, but both inferior and middle turbinals of one side may press, and conduce to the same result.

I have long been in the habit of pointing out to pupils at my clinic that there is a spot in the inferior meatus at which the lumen is narrower than at any other, and for this reason I have designated it, for want of a better term, the "isthmus" of the inferior meatus. Its situation is usually about one inch from the anterior extremity of the inferior turbinal; beyond this, as is well known, the meatus widens out, and the turbinal recedes slightly from the septum. The existence of this isthmus or strait has a practical bearing in the event, so extremely common, of a corresponding slight convexity of the septum. It is here that contact is most marked between the opposing surfaces, and treatment directed against pressure symptoms so caused must not fail to reach or exceed it.

B. *The Middle Turbinals.*

I would classify the exciting lesions of these bodies as under:

1. Any alteration in configuration—bony, cystic, or mucous—causing undue pressure against the septum, or outer wall, or both.
2. Polypoid degeneration of the middle turbinal mucous membrane.

The effect of simple hypertrophy and bulbous or cystic enlargement may be considered as one, but the corresponding septal area is probably the more important

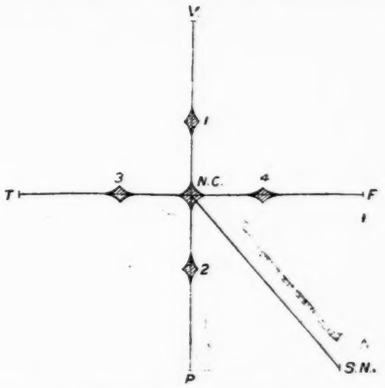

Fig. 2.—Diagram to illustrate the spread or overflow of nervous excitability from a nerve centre to neighbouring centres in the explanation of "referred" pain. The nerve centre N.C. is irritated from a peripheral surface—as, for example, the middle turbinal region S.N. An overflow of nervous energy extends from N.C. to neighbouring sensory centres, 1, 2, 3, 4. Undue activity in these centres is associated by experience with painful impressions in peripheral areas, as at the points V.P.T.F., which they represent. Hence irritation applied at S.N. produces impressions which will be referred to V.P.T.F.

sensitive surface involved in contact with either. The pain is usually intermittent, because the pressure is varied by rise and fall in the tumefaction of the mucous surfaces, septal or turbinal, owing to vasomotor influences from the medulla; in the latter case a tidal impression may be looked for upon the corresponding septal surface as in the case of the inferior turbinal, after spraying the part with cocaine solution. The location of the pain varies, but it usually follows the distribution of the supraorbital nerve, as already stated.

One case in my practice was especially interesting, because with bony hypertrophy of all four turbinals, no particular benefit followed the reduction of the inferior turbinals, but a portion of the headache was relieved by reducing the swollen right middle turbinal. On applying the same treatment to the left middle turbinal a year later all trace of headache disappeared. The pain was throbbing in character; it started from the root of the nose and extended over the forehead to the top of the head, at times reaching the temples, and affecting both sides alike.

Polypoid degeneration of the mucous membrane, like mucous polypi, sets up headache in a large proportion of cases, depending apparently upon the presence of more than one determining factor. Contact of surfaces and auto-infection from bad drainage and absorption of secretions may each be suspected of taking part.

C. *The Septum.*

Exciting lesions (distinct from abnormally-sensitive areas upon its surface):

1. Deflections and crumplings, affecting both cartilaginous and bony segments.

2. Ascending crests, spurs, and synechiae or adhesions.
3. Mucous hypertrophy of the "cushion" of the septum (*pulvinus*).

Many of the cases of pressure-induced headache in the nose, for which the middle turbinal is blamed, are caused or aggravated by high deflections of the septum. They constitute a large proportion of cases, and their importance is generally recognized.

Headaches from deflections of the triangular cartilage of the septum are also extremely common. Amongst my notes is one of a young male patient who, besides distressing headaches, complained of complete obstruction of this kind on the left side. The deflection was complicated by a spur, ascending crest, and adhesions to the inferior turbinal. Complete relief was effected by removing the crest and adhesions, followed up by septal fissure and displacement of the cartilage on Moure's principle.

Hypertrophy of the *pulvinus*, forming sometimes a more or less diffuse mucous protrusion, is looked upon by many authorities as a special site of excitation for headaches as well as for asthma and other reflexes, especially if it impinges upon the middle turbinal.*

II.—Mixed Class: Headache, both Referred and Toxaemic.

To this division I would assign the large class of cases in which the headache is present with accessory sinus suppuration, for with this disease we usually have blockage from granulations in the ethmoid region and at the lower opening of ths fronto-nasal canal. Here, and in cases of polypoid degeneration in the bullar region without frontal sinus suppuration, we have evidence of general toxic absorption, besides a great deal of abnormal contact capable of producing pain. I do not concur in the belief that the pain in frontal sinus suppuration is all practically due to pressure by the inflamed middle turbinal, for the latter body may be reduced without curing the pain. Whilst it is true that the sinus has several times been opened through a diagnosis founded largely on frontal or supraorbital pain when no pus has been discovered in it, and when therefore middle turbinal pressure was presumably at fault, yet we often have a periodicity in the pain accompanying genuine frontal sinus suppuration, and this may be assumed to depend upon the filling or emptying of the cavity. In antrum suppuration pain will recur in the malar region after evacuation with a fresh accumulation of pus, seemingly the direct result of pressure.

III.—Headaches due to Auto-infection from Various Sources of Toxic Absorption traceable to Lesions of the Upper Respiratory Tract.

I would include in this class a proportion of headaches in association with sinus suppuration, those in which local drainage is not seriously blocked, and much back-pressure pain thus eliminated. The headache may result, then, from secondary toxaemia due to absorption of pus from the mucous surfaces or from making its way down into the digestive tract. The pain of sphenoidal sinus disease is said to be usually local and felt at the back of the eyeballs and over the occiput, but if the discharge is freely poured into the naso-pharynx, headache from secondary toxic anaemia may fairly be expected to ensue.

Under the category of toxic headaches I include the pain in atrophic rhinitis. Headache is an almost constant as well as a very distressing symptom in sufferers from this disease. The patients, as we all know, in spite of the wasted condition of the turbinals and nasal mucous membrane, complain to us of actual obstruction, owing to the heaping up of massive crusts in the nasal chambers. Whether pressure contributes much to the pain I rather doubt, as the heavy crusts occurring in syphilitic cases are less apt to occasion it. On the other hand thorough cleansing always gives relief in atrophic rhinitis.

Under naso-pharyngeal obstructions, including adenoids the headaches of children and young adults suffering from these conditions must be classed.

Adenoid headaches are matutinal, and wear off in the course of the day, a feature of all such pains evolved from nasal obstruction and nocturnal mouth breathing. They have been attributed by Guye of Amsterdam to a hindrance in the flow of lymph from the intracranial lymphatics, which are obstructed in their passage through the cribriform plate in company with the branches of the olfactory nerve, these lymphatics being in direct communication with those of the nasal passages, accessory sinuses, and naso-pharynx.

This theory of stasis was formerly much in vogue in accounting for the headaches of nasal obstruction. According to Sargent Snow, writing in 1897, it was then held by Hajek and Schreck, and he himself attributed to this cause those cases of nasal headache in which he could detect no evidence of pressure. At the present time it is more customary to consider the headaches of adenoid and other mouth-breathing patients to deficient oxygenation of the blood in the lungs from obstructed nasal respiration. We have no proof that either view is entirely right or wrong. Some additional factor must, as usual, be necessary to bring on the resulting headaches when they occur, since many adenoid children do not suffer from them.

IV.—Headaches from Inflammatory Intranasal Sources.

A class under this heading has already been made by Harrison Allen, who, in his classical paper dated 1886, divided headaches into reflex, neurotic, and inflammatory. We meet with a head pain accompanied by heat and throbbing, not infrequently, after curettings for disease in the ethmoidal regions, all which symptoms subside in due course under ice-cold applications. In acute sinusitis, swelling of the mucous membrane shuts off the exits for drainage and ventilation of the accessory cavities, and when the hiatus semilunaris is thus involved, the frontal and periorbital regions representing the frontal sinus is the seat of the pain. It is thought that exhaustion and absorption of the contained air of the sinus induces hyperaemia of the mucous membrane virtually by a species of dry cupping, thus giving rise to the suffering. In this way may, perhaps, be explained the facial discomfort of iodism in those who are thus affected by this drug. Most people feel a modified degree of the same dull ache during the first stage of a common cold.

Diagnosis of Nasal from Systemic Headaches.

As previously indicated, the pain in the head is not pathognomonic in character or localization, so that we are thrown largely upon the test of treatment in distinguishing a referred nasal from a systemic headache, and if our attention is not especially directed to the nose by catarrhal symptoms we should look carefully into the organ for surface contacts. In accessory sinus suppuration we have the presence of pus in the nasal chambers and the help of transillumination; moreover, much of the pain is located immediately over the affected sinus, though it may radiate from thence, but the diagnosis, if doubtful, can be cleared up by exploration.

We eliminate *cerebral disease* by absence of pain referable to cranial complications.

In *asthenopia* pain is relieved by curing the error of refraction.

Sick headache is traceable to gastric disturbance or some error in diet.

Migraine is preceded by prodromas, is periodic, often hereditary, there are visual abnormalities, such as fortification or zigzag scotoma, and injection of the conjunctivae.

Headaches from goutiness, renal disease, quinine, etc., are also to be diagnosed by special symptoms from those of nasal origin.

In all cases of nasal obstruction and catarrh the headache disappears *pari passu* with the elimination of those conditions.

By far the larger proportion of cases revealing a tight middle turbinal on examination of the middle meatus is

* It is now ten years since I urged, in a paper read at the Ipswich meeting, and published in this JOURNAL, the advisability of discontinuing the term "tubercle of the septum" (tuberculum septi) for the soft mucous eminence which is more or less pronounced as an anatomical feature in the middle meatal aspect of the septum nasi. Apart from the fact that we have a disease known as tubercle of the septum with which the anatomic "tubercle" is apt to be confounded in discussion, the term "tubercle" is not happily chosen to represent a body which when hypertrophied assumes the character of a cushion or puffy swelling. In osteology a "tubercle" is represented by a small rounded projection, and there seems to be no good reason why this conception should not be consistently followed. I therefore take the liberty to reintroduce a substitute word as formerly proposed, and which I hope other authors will either adopt or replace by something more suitable.

relieved partially, if not entirely, by resection of the obtruding part of that body. The use of the probe in diagnosis is advocated, and will start the familiar pain if applied to the nasal source, but in areas so sensitive to touch at all times I use it sparingly, and then chiefly for estimating the space between surfaces in close approximation. The cocaine spray has a test value if applied during a time when headache is complained of. Whilst, perhaps, the majority of the subjects are females, a number of men suffer in the same way; nor do I think the members of either sex belong necessarily to the so-called neurotic class, though the latter includes a fair percentage of them. Some supraorbital neuralgias and rhinalgias will perhaps remain in whom no objective nasal cause can be discovered, and it is a question whether we should remove a middle turbinal experimentally which, even if enlarged, is exciting no perceptible pressure anywhere. But cases do occur in whom the excision of an abnormal-looking turbinal has cured headache where the cause was not obvious, possibly by some effect akin to counter-irritation. In any case, no harm has been done in skilful hands. Other patients, I am informed, do very well in the care of experts who inject remedies into the nerve or its sheath, whilst for more severe cases the special nerve resection operations which have been devised are available as a last resource.

Time will not allow of my entering further into the question of treatment, but I hope that sundry observations under the respective headings of this paper will serve to indicate the lines on which surgical measures must proceed for the cure of nasal headaches.

[Want of space unfortunately prevents the publication of the series of illustrative cases, and also of the full bibliography that form the proper termination of this paper.—L. H. P.]

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DISCUSSION.

Dr. Syme (Glasgow) thought that it was advisable to examine carefully for evidences of chronic ethmoidal and sphenoidal disease before deciding that headache had not a nasal origin. Degenerative changes in their cavities were more common than was thought, and the second branch of the fifth nerve was near to them, and it was common experience that toothache caused reflex pain in other branches of the fifth nerve.

TUBERCULIN IN LARYNGEAL TUBERCULOSIS

By W. Camac Wilkinson, M.D.Lond., F.R.C.P.,

London.

Laryngeal tuberculosis offers the best opportunities for studying the value of tuberculin in the treatment of tuberculosis—at least, in Australia, where, so far as my experience goes, lupus is extremely rare. Two advantages are self-evident: The effects of treatment can be closely and directly watched, and the prognosis of well-marked laryngeal tuberculosis being so utterly bad, any real successes must be attributed to the method. In the successes I have had with tuberculin I have not had recourse to sanatorium methods, and even when the disease of the lungs has reached the third stage I have witnessed ulceration of the larynx completely heal in several cases under tuberculin without any local treatment. In these cases also the lungs have healed in a clinical sense. Cough and expectoration have ceased, and healthy nutrition and bodily vigour have been restored.

Laryngeal tuberculosis is generally a late incident in pulmonary tuberculosis, and secondary to the disease in the lungs. Has any one ever seen a case of laryngeal tuberculosis secondary to a tuberculous lesion elsewhere than in the lungs? Still, laryngeal tuberculosis may be so obviously in advance of the lung trouble that it certainly appears to be primary. I have seen at most three such cases in Sydney, and another recently through the courtesy of our President.

Case I.

In the first case there was a circular, raised ulcerating mass involving the whole of the upper surface of the cord in its middle third. Symptoms of pulmonary trouble were absent. No cough, no expectoration, and physical signs were very doubtful.

Case II.

The second case was even more remarkable. The epiglottis was severely and extensively ulcerated, and the ulcer extended down to the base of the epiglottis in its centre so as to form a V-shaped depression. The larynx also was seriously involved. Both cords were hidden from view by a swollen red oedematous mass on each side, especially on the left side, where there was also ulceration of the mucous membrane. The swollen mass so encroached upon the lumen of the larynx that there was stridulous breathing, aphonia, and dyspnoea. The patient, aged 16, the daughter of healthy parents, was first taken to Mr. Brady, who told the parents that there was advanced and hopeless laryngeal tuberculosis, and refused to adopt any local treatment. Six months before this the child had been sent up the country, because "she was run down." The child, after Mr. Brady's verdict, was brought to me, and I also at first declined to undertake any treatment. There were no evident signs in the lungs; no cough or phlegm or pain. When I saw the child there was progressive hoarseness, ending in aphonia, and the child looked and felt ill. Temperature normal. Subsequently I consented very reluctantly to take the girl into the hospital, and began treatment with tuberculin at once. I instructed my house-physician to do tracheotomy if there should be urgent dyspnoea. I gave progressively increased doses of P.T.O. and Spengler's I.K. preparation. At first there were reactions to 100° several times, but subsequently large doses were well borne. In two or three months' time the improvement was extraordinary. Both cords came into view and were thickened and reddened, but not fixed. The voice returned. The V-shaped fissure filled up with organizing tissue; the edge of the epiglottis healed. Meanwhile the girl gained 10 lb. In another few months the gain in weight was 18½ lb. There was no attempt at open-air treatment, though the child was well fed. The last note (March, 1910) is: "Epiglottis completely healed and edge smooth; larynx apparently normal." Patient feels and looks perfectly well. Nine months after treatment patient was tested and did not react to 0.045 c.cm. old tuberculin. Mr. Brady was interested in the case, and I arranged that he should see her again.

Case III.

The third case showed also definite physical signs of pulmonary tuberculosis in an early stage, and for six months there had been a cough ending in retching. There was some phlegm, but I could find no tubercle bacilli. Appetite poor. Weight, 8 st. 12 lb. Pulse 108. Patient looked very pale and ill. The larynx was seriously affected. There was loss of voice amounting to aphonia. On examination the left cord was more affected than the right, markedly infiltrated and fixed at posterior end, so that it could not be approximated to touch the right cord. There was also superficial ulceration at junction of cord and arytenoid, spreading also into interarytenoid area. The right cord was red and velvety. I treated this case also with P.T.O., and in less than two months her condition was thus described: "The distressing cough entirely ceased. The voice was fully restored, the night sweats disappeared, and above all the weight increased substantially. At the present moment, after a few months of tuberculin treatment, the patient is a different being, to all outward appearance vastly improved in health, with energy renewed in a material degree, and, so far as one may judge from what one sees, on the high road to absolute recovery. This result has been achieved without any resort to the open air." She gained 10½ lb. I was able to watch the cords become clean and white, and the ulceration healed.

Case IV.

The fourth case I saw through the courtesy of our President, who sent me the case for tuberculin treatment. The trouble began in the larynx, epiglottis, and left tonsil. At no time have any obvious pulmonary signs or symptoms presented themselves. The lesion on the epiglottis was accurately excised, and the lesions on the aryepiglottidean fold and left tonsil were treated by galvano-puncture. The lesion in the tonsil was brought to a complete standstill, and subsequently did not react to tuberculin. The result in the larynx was not so complete, as small doses of tuberculin caused marked hoarseness for two or three days.

May 13th. Even now each dose of tuberculin brings on hoarseness. After a time tuberculin failed to produce this local reaction. Sad to say, before the patient came to me for treatment a new focus had appeared on the upper surface of the soft palate just above and to the left of the uvula, looking into the post-nasal space—curiously on the opposite side of the mesial line to the earlier lesions. This focus ulcerated and formed a well-marked excavation with swollen, rounded infiltrated edges and considerable redness and swelling of the surrounding tissues, including the uvula.

At this stage I saw the patient and at once began treatment with tuberculin. No local treatment was adopted, nor any sanatorium measures. After three months' use of tuberculin, which caused decided reactions with every dose, the patient being extremely sensitive to tuberculin, the ulcer slowly healed and the redness and swelling disappeared. I do not presume at this stage to say what the final result may be, because even now the patient is so sensitive that one has not yet been able to give large doses. For a month the patient was treated in London, but since then the patient, having been instructed, is

giving herself the injections. The over-sensitiveness persists. I have rarely seen such prolonged over-sensitiveness, and I admit that I have given the doses more cautiously and at longer intervals than is my custom. I am now asking myself whether the over-sensitiveness has been perpetuated, because I have increased the doses less rapidly than usual and have repeated them, not every three or four days, but every seven or eight days. In order to see whether this is so, I am now giving a dose which I hope will cause little reaction, and I shall repeat this dose every two days. The patient writes that, in spite of the reactions, her throat feels quite well and she feels well in herself. Still, after the doses there is temporary hoarseness. I shall not be satisfied till I have given large doses without any reaction, and then after an interval of nine months have tested her. Whether I shall succeed with tuberculin where the most skilful surgical measures have failed remains to be seen. While she was under Mr. Tilley the patient had open-air treatment at St. Moritz. It will be extremely interesting to watch in this case the effect of tuberculin alone. The patient cannot afford to remain under constant observation.*

So much for the tuberculin treatment of tuberculous lesion occurring early in the larynx. Laryngeal tuberculosis, secondary in incidence and appearance to pulmonary tuberculosis, is a capricious manifestation occurring in any stage of lung disease, and with increasing frequency and intensity in the later stages.

In 150 cases of pulmonary tuberculosis in the first stage I have seen but a few cases in which the lesion could be definitely described as tuberculous. Laryngeal catarrh is a common incident in early pulmonary tuberculosis, but unless either the appearances in the larynx are distinctive or the laryngeal lesion reacts to tuberculin I do not describe them as tuberculous. There is a pre-tuberculous laryngitis of a simple kind. After treatment with tuberculin I have never seen a tuberculous development in the larynx in these early cases. Case II, above reported, belongs to this category.

In another instance an accomplished singer consulted me for "cracked" voice. I found absolute and hopeless paralysis of the right vocal cord, due to injury of the recurrent laryngeal nerve by a tuberculous lesion of the pleura and apex of the right lung. This symptom led me to examine the apex of the lung, where I found signs of early tuberculosis. The first test dose of 0.001 c.cm. Old Tuberculin raised the temperature to 102.6° and settled the diagnosis. Treatment with tuberculin healed the lung but the cord was permanently paralysed.

The third patient was also a fine singer who completely lost her voice with the onset of the disease. The changes were not very distinctive but she reacted energetically to 0.001 c cm. Old Tuberculin, and was then treated with T.E. up to 4 c.cm. There were obvious signs at the right apex. She lost all her symptoms, gained a stone, and regained her voice. Some years after I heard her sing at the Sydney Town Hall. She married later and was quite well in 1909, six years after I treated her.

Case IV long suffered from hoarseness. Reacted to tuberculin. Treated with P.T. up to 0.775 c.cm., working all the time. Completely recovered health and voice. A year after treatment did not react to 0.045 c.cm. Old Tuberculin. Well one year later.

Accordingly the typical lesions of laryngeal tuberculosis are rare in the early stages of pulmonary tuberculosis, and in my experience invariably yield to tuberculin treatment alone.

In the second and third stages of pulmonary tuberculosis, when tubercle bacilli are being constantly discharged by the air passages, typical lesions become more and more frequent. Statistics show that the larynx is affected in nearly 50 per cent. of the late stages of pulmonary tuberculosis. Sanatorium statistics must be ignored, because laryngeal tuberculosis disqualifies for sanatoriums. In German Sanatoriums (Hamel) out of a total of 7,258, and 2,413 women, there were 5 cases of laryngeal tuberculosis among the men, and none at all in the women. Sanatoriums have to live and keep up their reputation by records, and are forced to protect themselves from utter failure by rejecting unfavourable cases. The excuse given for rejecting laryngeal cases is that high altitudes are bad for these cases. It would be nearer the truth to say that laryngeal cases are bad for sanatorium statistics.

In 90 cases of pulmonary tuberculosis in the second stage I have had 15 with very definite laryngeal tuberculosis, six manifesting severe and persistent hoarseness with redness, swelling, and thickening of the cords, while nine others had both infiltration and ulceration. Of course when severe laryngeal tuberculosis complicates the second stage of lung disease, the case should be classed with those of a later stage.

Yet in all the six cases of the milder form there has been complete and permanent recovery of the voice, with return of the cords to a healthy state. In the cases with ulceration I have watched the ulcer slowly heal.

In one severe case with a circular ulcer nearly as large as a threepenny-piece developed between the arytenoids I watched the ulcer slowly heal till not a trace of it was left. This occurred early in my experience when I was still using lactic acid (80 per cent.). The lactic acid seemed to do positive harm—so I gave it up, and have not used it since. The lung also, though in a late second stage, improved. Cough and expectoration ceased and tubercle bacilli disappeared from the sputum.

For four years the larynx remained well, but the patient was very poor and tried to make a living by teaching deaf-mutes lip-reading. Her health broke down again, and she died of pulmonary tuberculosis eight years after she had shown a severe lesion of the larynx in the second stage or worse of pulmonary tuberculosis.

In all the other cases the improvement was extraordinary. One of them had been treated by Mr. Percy Kidd in 1905. I saw him in March, 1906.

Then the lungs were R. II, L. II–III. Sputum oz. i, Tb. G. 4. There was much infiltration of cords, especially left. I gave him several courses of tuberculin. The improvement in the lungs, in general health and in larynx was very great. Unfortunately a band of fibrous tissue formed across the anterior angle of the larynx, which seriously injured the voice. The patient was a salesman and had to do much talking to get a living. Otherwise he was reported as well at the end of 1909. In another case an ulcer formed on false cords with much swelling which healed, but there was also ulceration of cord and aryepiglottidean fold, which healed and left a firm band of organized tissue which fixed the right cord and seriously affected the voice.

In this case the result was not satisfactory as the disease in the lungs progressed and in two years the patient died.

Case IV illustrates well the common history of cases treated at sanatorium.

July, 1905, sent to sanatorium with note: "No physical signs and no tubercle bacilli." "Had previously lost 3 st. in a few weeks." At sanatorium gained 28 lb.; "one of their best cases." Discharged and went to sea. In five weeks lost 22 lb. Came to me. State of lungs, II. Tubercle bacilli, G. 5. Patient looking ill and very weak. Treated with tuberculin while living in poor part of Sydney. No sanatorium treatment; improved immensely. Lost cough, recovered appetite and strength. No relapse while under my observation (more than a year). Came to see me every few months. Larynx gradually returned to normal condition. The cords had been red and interarytenoid area rough and velvety.

CASE V.

Case No. 49, p. 209, in records published in book. Lungs stage, R. II; L. II. Temperature 100° to 101°. Hoarseness, diarrhoea, and griping pains for nearly three months. Later double ischio-rectal abscess. Treated with tuberculin P.T.O. to 1 c.cm, then P.T. to 0.15 c.cm., and later up to 0.7 c.cm., gained 21 lb., and recovered voice. Very well a year later.

CASE VI.

Lungs, R. II; L. II. Appetite poor, looks very ill. November, 1907, very hoarse. Lungs, R. II; L. II. Tb. G. 3 in large clumps. Treated with P.T.O. and P.T. Many reactions, 100°, 100.6°, 101.4°, 101.6°, 102°, yet great improvement. Gained more than 9 lb. (6 st. 5 lb. to 7 st. 1 lb.). Voice restored; cords healthy. March, 1910, very well.

CASE VII.

State of lungs, R. II; L. I–II. Sputum, 3 oz. Tb. G. 6. Night sweats. Temperature 100.6°–103.6°. Country air two years. Disease began while in country. Came to Sydney. Sent to mountains, got worse, and pleurisy supervened. Marked tuberculous laryngitis, with redness and infiltration. Treated with tuberculin. March, 1910. Very well.

CASE VIII.

Whole or upper surface of epiglottis converted into a thick, granular, ulcerating mass; there was marked infiltration of cords and a small interarytenoid ulcer causing complete aphonia. Lungs, R. II; L. I–II. Sputum, 2 oz. Tb. G. 5. Tuberculin P.T.O. to 1 c.cm. Then P.T. to 0.8 c.cm. Epiglottis healed completely and cords recovered. Voice returned. No cough or phlegm. Gained 21 lb. Tested nine months after, no reaction to 0.05 c.cm. Old Tuberculin.

This man lived 500 miles from Sydney, and gave himself most of the doses.

CASE IX.

State of lungs, Stage II, Tb. G. 4. Hoarseness due to tuberculous laryngitis, chiefly infiltration of cords and interarytenoid

* June 30th: I have now another case under treatment, in which both cords are reddened and juicy; voice affected for some months. November 20th: Patient has taken 1 c.cm. of P T., weight 10 st. 1 lb., voice normal, reactions to tuberculin have entirely ceased.

area. Treated with P.T.O. and P.T. Many reactions, 102°, 102°, 104°. Yet six months after "feels very well, physical signs almost disappeared, nothing else abnormal."

This case has not been long enough under observation to justify any opinion as to the ultimate result.

But gratifying as these results have been, they are not to be compared with the extraordinary results I have seen in pulmonary tuberculosis later than Stage II, in Stage II–III, and Stage III, obtained by using large doses of tuberculin with no sanatorium methods at all, without any local treatment, and with a total disregard of the opsonic index and the curious negative phase.

CASE I.

Aged 32, weight, 9 st. 6 lb. Came to me in December, 1902. Lungs, R. III (cavity); L. I–II–II. Treated by thirteen doctors. Abundant sputum, many ounces. Tb. G. 6. Very hoarse. Obvious infiltration of cords, especially left, involving interarytenoid space. Later definite ulceration of cord occurred which spread to interarytenoid space. Gave several courses of Old Tuberculin, T.E., P.T.O., T.O.A., P.T., and old T. Ulcer completely healed—all signs of active disease in lungs disappeared. Patient gained over 40 lb., and has been working in a newspaper office for several years. I saw him in 1909, seven years after treatment, in robust health, and with a perfectly normal voice. His sister, affected after him, had sanatorium treatment for ten months—much improved, but dead in less than two years from onset of illness. She had no tuberculin treatment.

CASE II.

1904. Boy, aged 17, weight, 7 st. 10 lb. Had been under Dr. S. S., in Sydney, for two years. "Took pounds of Dr. S.'s medicine, cod-liver oil, and maltine." Always lived in open air. For six months travelled forty miles, then forty miles back once every week to the doctor. "Rest cure" with a vengeance, then sent inland. "Got much worse." Then his father brought him to me. State of lungs, R. III; L. II. Numerous Tb. and mixed infection (streptococci). Pulse 110 to 120. Temperature, 100° to 103°. Abundant sputum. Very obvious laryngeal tuberculosis, causing great hoarseness, cords reddened, ridged and ragged. At urgent request of father and boy treated with tuberculin, P.T.O., and then T.E. up to 3¼ grams. Many reactions, 100°, 100·6, 101°, yet gained weight, 10 lb. The boy said, "Not two coughs a day since last dose, not a bit of phlegm. Oh, it was grand." He gained another 11 lb., and pulse was 80.

In 1906 I tested him up to 0.05 c.cm. Old Tuberculin, and he did not react. The larynx was healthy and voice recovered. Two years later he was well.

CASE III.

1904. Patient had had open-air treatment at Orange for one year and a quarter under several doctors. Came to me an absolute wreck early in 1904. He could not speak, great breathlessness, and cyanosed. Temperature 100.5°, 101°, 102°. State of lungs, R. III; L. II. Abundant thick yellow sputum. Tb. G. 6. His doctor left for England and visited patient's mother to inform her that her son could not live more than a month or two. He also diagnosed "ulceration of the vocal cords"—quite rightly. Dr. S. S. ordered cod-liver oil and a squirt. At first I refused to treat him, but he implored me to try, and I yielded.

Treated with P.T.O., and then three courses of P.T. up to 0.75 c.cm. He gained 32 lb. He was about eighteen months under treatment.

1908. Saw him in excellent health and spirits. No cough, no sputum, and a good robust voice.

1910. Managing a rubber plantation in the Malay States. "Never was better in his life."

I have only to point out also that tuberculin had this marvellous effect in spite of regular fever, as in the previous case, in order to show the profession that even in hopeless cases wonders can be performed. If one can do this in hopeless cases, is it any wonder that one always succeeds in easy and mild cases?

CASE IV.

Had been treated for two years without benefit. Came to me. State of lungs, R. II–III; L. I–II. Sputum, 4 oz. daily; Tb. G. 6; pulse 96. Infiltration of one vocal cord; later ulceration. Complete loss of voice.

Treated with T.R. In spite of great sensitiveness and severe reactions (103°, 102.6°, 103°, 103°, 103°), result was "no cough or expectoration, very good appetite, and complete recovery of lost energy." This result obtained without local treatment to larynx, and without any open air methods. He lived near Sydney, and, like all the other cases, was treated as an ambulatory case. Four years later he looked and felt well, but as he reacted I gave him P.T. up to 0.85 c.cm.

CASE V.

Young man, aged 22. State of lungs, R. II–III; L. II; sputum 4 oz.; Tb. G. 8 in numerous clumps; mixed infection streptococci; larynx—advanced tuberculosis, both cords red and ragged, with swelling over arytenoids. Three months before he came to me Dr. S. S. of Sydney said it was an early stage, and "there was nothing to worry about," and sent him up the country. Certainly he gained 10 lb., but meanwhile the disease advanced almost to the third stage, and for the last two months he had completely lost his voice.

I treated him with T.R. and T.E. He recovered his voice, the larynx healed, and the sputum was a dessert-spoonful instead of half a cupful. Unfortunately he gave way to drink, and two or three years later I heard he had had a relapse. He was alive for several years after I treated him.

CASE VI.

Young girl, aged 17, came to see me in 1902. State of lungs, R. III; L. I to II. Pulse 110 to 120. Temperature 100°. Abundant expectoration, Tb. G. 5. Tuberculous laryngitis of mild form. Treated with T.E., P.T.O., P.T.

1904. Patient looks very well, has recovered all old energy, can sing well, and has no cough or expectoration. Pulse normal.

1910. Eight years after she was told she was dying, she has had a slight relapse, but is responding well again to tuberculin treatment.

For many years I have given up all other methods of treating laryngeal tuberculosis except by means of tuberculin. No drugs—though Sir Felix Semon seems to approve of creosote. No open air treatment, no local applications except palliatives for pain, no surgical measures such as lactic acid, excision (Heryng), galvanopuncture—and my results have been in some cases quite extraordinary. In cases in the first stage, although some date back for twelve years, I have not seen laryngitis supervene in a single case. Certainly in two cases in the second stage there was a relapse after six years' complete freedom from symptoms, and in both these cases laryngitis soon developed and death followed. In both these cases, in spite of my advice that they should be tested from time to time, they put off coming for six years, and then I could do nothing for them. In most of the cases in which tuberculous laryngitis existed, whether in II, II–III, or III stage, great improvement followed, and for several years there has been no return, while in the third stage I have seen even ulceration on the larynx heal. The series of cases in which I have carefully watched for many years the immediate and after-effects of tuberculin treatment according to clinical and not laboratory methods, leaves no doubt in my mind that in tuberculin we have a remedy not only better than all other known methods combined, but far the best that is likely to be suggested for use at this or any future time in all cases of laryngeal tuberculosis, even in the most hopeless of cases. Nothing has done so much to strengthen my firm conviction of the value of large doses of tuberculin in pulmonary tuberculosis as the extraordinary effects I have closely watched week after week, and year after year, in laryngeal tuberculosis.

DISCUSSION.

Dr. WATSON WILLIAMS (Bristol) said that they must all be prepared to welcome any method of treating laryngeal or other forms of tuberculosis that give better results than they hitherto had obtained. But he did feel very strongly that Dr. Camac Wilkinson's remarks about sanatoriums and the exclusion of laryngeal cases therefrom, in order to improve their statistics, were inaccurate and unjustifiable. The speaker had known many laryngeal tuberculous cases become cured at sanatoriums and by sanatorium treatment alone, and others by local measures combined with sanatorium treatment. He also believed in the value of minute doses of tuberculin, but considered that it was essential to begin with very small dosage and only gradually increase it, so as to avoid those fulminating local reactions which, in his opinion, did so much harm when tuberculin was first introduced; and he felt compelled to add that the only case of P.T.O. he had seen was a case of his own, which was referred to the speaker by her doctor as a pure laryngeal case. Her larynx was much diseased and very painful and swollen, but her lungs were also involved. After being practically cured at a sanatorium, and with tuberculin injections, she was sent to Dr. Wilkinson. The only result he had observed from the P.T.O. injections this patient had from Dr. Wilkinson was that the repeated doses greatly irritated and inflamed the larynx, and in fact seemed to have made it much worse than before. Still, he should be very glad if, in spite of this, the case went on to a complete and permanent recovery.

Dr. DONELAN (London) said that he had given up the use of tuberculin for some years, and preferred to treat laryngeal ulceration by silence, local applications, and galvano-cautery in suitable cases. He would be glad if Dr. Wilkinson would give details of his methods. He was glad to notice that many of the patients referred to were alive and able to work six and eight years after the healing of the ulcers. He would like to know how often that obtained, as in so many cases the healing of the laryngeal ulcer was the precursor of more rapid deterioration in the lungs.

Mr. WAGGETT (London) had found tuberculin treatment of value in laryngeal tuberculosis in those cases which had the essential characteristic of chronicity—namely, where a balance had been established in the conflict between the bacillus and the patient. By means of tuberculin one could in such cases turn the scale in favour of the patient.

Dr. PERMEWAN (Liverpool) would have liked to hear something of the cases that had showed no improvement.

Dr. BIRKETT (Montreal) said that tuberculin was very generally used by him, not only as a means of diagnosis, but also of treatment. He had yet to see a case in which it had been used for either purpose followed by oedema of the larynx, as stated by some authors. There was no doubt that it served to differentiate conditions which clinically resembled each other. The value of its use to this end was very beautifully illustrated in a patient whom he saw a short while before leaving Montreal. It concerned a young man, 37 years of age, who had been hoarse for about nine months, no other symptoms complained of. Upon examination, an infiltration, involving the anterior third of the left vocal cord, was noted, the surface quite unbroken, and a few fine vessels to be seen coursing upon it. There was no interference with the normal movements of the cord. Physical examination revealed absolutely no pulmonary tuberculosis. There was no history of lues, and clinically the infiltration did not look like malignancy. The pulse and temperature were quite normal. The administration of potassium iodide had no effect upon the local condition. Half a milligram of tuberculin was administered hypodermically. He might say that the patient had been placed in bed for two days before its administration, and the temperature carefully observed and recorded every two hours and found to be normal. This first injection gave a slight reaction, and upon repeating the injection, making it 1 milligram in quantity, there followed a very typical reaction of latent tuberculosis, the temperature gradually rising from normal to 102°, and gradually subsiding to normal within eighteen hours, and remaining at that afterwards. This case illustrated very forcibly, in his mind, the value of tuberculin for diagnostic purposes, especially where there might be in one's mind a doubt as to what the local condition truly represented.

Dr. WILKINSON, in his reply, said the lungs in the cases mentioned had improved, and that he considered that the prognosis depended upon the lung condition. The larynx might get well, but if the lung did not also improve the patient would die.

DISCUSSION ON VASOMOTOR RHINITIS.

OPENING PAPERS.

I.—H. S. BIRKETT, M.D.,

Montreal.

Etiological Considerations.

IN considering the etiological conditions of vasomotor rhinitis I fully agree with Herzog, who expressed his opinion in a most able paper published by him in 1881, "That we must not be ashamed to confess our complete lack of knowledge of the etiological conditions of this disease in so many cases."

Amongst the predisposing factors, a neuropathic disposition, whether inherited or acquired, must, as first pointed out by Beard, be put in the foreground; changes of the weather and colds must also be considered. The condition is met with at all ages and in every condition of life. While it is doubtless true that the physical and moral forces of civilization encourage its development in the higher walks of life, they probably do so only so far as they predispose to abnormal excitability of the nervous system in general. It is more common amongst women than is generally supposed. Its phenomena are not due to race peculiarities. I have observed it in several members of the same family, and it is possible that a peculiar excitability or deranged condition of the vasomotor system may descend from father to son, and determine the appearance of the affection in the latter; but it is difficult to say how far the influence of inheritance, as originally suggested by Wyman, enters as a factor into its causation. Over-exertion, either mental or muscular, undoubtedly predisposes, through lowering the nerve tone; a rheumatic or gouty diathesis certainly does.

Exciting Causes.

Opinions at present are divided as to whether the exciting causes arise external to, or within the body itself.

The entrance of some foreign material of whatever nature, and especially, as first noted by Blackley, the pollen of certain flowers and grasses, acts as an exciting agent. The actinic rays of the sun prove an excitant in certain individuals. Pathological conditions of the nasal structures, as first described by Daly and Roe, act in no small way.

Ballinger, following in the footsteps of Gradle, has very recently expressed the opinion that some cases of hyperaesthetic rhinitis may have, as possible etiological factors, a catarrhal sinusitis, especially of the ethmoidal and frontal. It is reasonable to suppose, according to this writer, that an inflammatory disease of the nose, attended with an irritating secretion which is characteristic of catarrhal sinusitis, might affect the filaments of the terminal sensitive nerve and render it extremely hypersensitive. This hypothesis, Ballinger states, is based upon clinical observations; but as yet they are too meagre to warrant final conclusions.

Braden Kyle expresses the opinion that in many cases the cause of the local irritation in the nasal mucous membrane is brought about by some chemical changes in the constituents of the mucous secreting glands.

Grayson, in a very recently published paper, expresses his strong conviction that this condition is to be attributed to a chronic autotoxaemia due to dietetic indiscretions, and without this systemic condition the neurotic nose would be unknown.

As an unusual cause, Chappell reports 4 cases of vasomotor rhinitis from malarial poison.

To state the subject briefly, there must exist:

1. A neurotic temperament implying susceptibility.
2. A local morbid condition of the nasal mucous membrane, which may or may not be associated with gross pathological changes of structure.
3. An irritant, acting either from without or within the body itself.

Pathology.

The earliest attempt to explain the symptoms upon the visible changes in the nose was made by Hack in a memorable monograph published in 1884, which gave rise to considerable comment. Hack assigned the nasal symptoms to a sudden and turgescent condition of the anterior extremity of the inferior turbinated bodies, resulting in great tension of the mucosa, which was interpreted as the stimulating factor of the nerve-end apparatus. In this opinion he was supported by Sommerbrodt, Schech, Koehler, and Goetze. Arrayed in opposition to this view were B. Fränkel, M. Schäffer, and Schnitzler, who maintained that the nasal symptoms were due to nerve enervation.

Arrayed in further opposition to the fullest acceptance of Hack's far-reaching theory we find Semon and McBride.

Later, Baratoux, Hering, John Mackenzie, and Hack himself proved that pathological hyperaesthetic areas existed also in the posterior part of the inferior turbinated bodies, in the middle turbinated bodies, and the septum.

Rethi does not attribute special significance to the repletion of the erectile bodies, and does not regard it as an active reflex link between the peripheral stimulation of

a sensory nerve and an elicited reflex, but interprets it as a phenomenon co-ordinate with other reflexes.

Lewy endeavours to explain the hyperaesthesia on the ground of having found in two cases who were the subject of vasomotor rhinitis a very large number of thickened nerve fibres to the free edge of the mucous membrane of the inferior turbinated bodies.

Widakowich undertook a similar investigation, but was unable to confirm Lewy's findings. Bresgen, in a very able paper, published last year, upon the relation of the sympathetic to diseases of the nose, points out that the very careful investigations of Bidder and Volkmann have shown that the sensory nerves distributed to the mucous membranes contain, as a rule, a very large number of fine sympathetic fibres, not uncommonly five to twenty times more than cerebro-spinal fibres. The preponderance of the fine fibres is most striking in the branches of the trigeminus distributed to the nose.

Bresgen further refers to the work of Max Buch, which, although particularly concerning the abdominal cavity, is, nevertheless, of extreme importance to the rhinologist. According to his findings, the sympathetic nerve is non-sensitive in the healthy condition only, as shown by animal experimentation; when it is stimulated for some time and rendered hyperaemic, the sympathetic nerve becomes extremely sensitive to pain. Numerous reflexes of a sensory, motor, and vasomotor character could be produced by way of the hypersensitive sympathetic. From the results Bresgen regards the reflex nasal symptoms as arising from inflammatory conditions of the sympathetic fibres. What the true pathological changes are, either in the afferent nerve terminals or the ganglionic centre, in vasomotor rhinitis is still unknown, because we have as yet no technique which will satisfactorily stain pathologically-changed axis cylinders, of which these nerves are composed. This is a statement given to me by J. Gordon Wilson of Chicago, whose work on the vasomotor nerves has been published in the *Proceedings of the Royal Society*. All we do know is that the peripheral terminals are abnormally sensitive, and the central nervous ganglion unstable.

Prognosis.

The prognosis of vasomotor rhinitis may generally be considered favourable, although one must be cautious. Even with operative interference, the prognosis is by no means certain, because the disease may at the same time have still other causes, and, even when the trouble has originally started reflexly from the nose, permanent changes of the nerve may develop in the course of time, which possibly and probably fail to disappear even after the original pathological focus has been removed.

Symptoms.

In reference to the symptoms of vasomotor rhinitis, the patients, in my experience, may be grouped into three classes, each class varying a little in detail from the other, both in the objective as well as the subjective manifestations. The first group I find chiefly amongst females who are of slight physique and of nervous temperament. The subjective symptoms are those of frequent attacks of sneezing, often violent in character, followed by a profuse discharge of clear mucus from the nose, but not associated with any nasal obstruction.

The paroxysm is not accompanied with any feeling of irritation of the mucous membrane of either the eyes or the throat. Following the attack is a feeling of general exhaustion and headache, but in the course of an hour or two the patient is quite well again. At the time of menstruation the symptoms are usually more severe than at other times.

In the second group the individuals are, as a rule, men who are of a florid countenance, and show evidence of good living. The subjective symptoms being those just enumerated, plus marked nasal obstruction, lacrymation, and irritation of the mucous membrane of the throat and conjunctivae. Objective examination shows the mucous membrane of the inferior turbinated bodies principally to be markedly swollen and very hyperaemic.

In the third group the only difference from the second group is in the objective symptoms. The mucous membrane of the inferior turbinated bodies, as well as that of the septum, is swollen but very pale, and has a slightly stippled appearance, a condition to which attention was first drawn by Glasgow.

The one disease which vasomotor rhinitis might possibly be mistaken for is the escape of cerebro-spinal fluid, but the differential diagnosis as laid down by StClair Thomson is readily understood by the lucid remarks made in reference to this matter in his work on the cerebro-spinal fluid—namely, that in vasomotor rhinitis "the flow takes place almost invariably from both nostrils, although sometimes more from one than the other. It is not noticeably influenced by the position of the head. It ceases during sleep. It is, as a rule, preceded or accompanied by other signs of photophobia. The flow is very variable, and seldom has any regularity, either in the dripping or in the intermission; but the flow is seldom continuous for more than a few hours or a few days at a time.

Treatment.

"As the symptoms of vasomotor rhinitis are dependent upon a nervous diathesis or nervous weakness, therapeutics have a double task to fulfil, a local one to remove or rather shorten the circulatory irregularities, which, properly speaking, are only incidents of the neurasthenic condition, and a general or constitutional treatment to combat the fundamental trouble, the neurasthenia, for only after the improvement or cure of the latter can we consider our task as solved, because the possibility of a relapse is then more distantly removed" (Herzog).

The individual case should be carefully studied from all aspects and, according to Richardson and Grayson, the gastro-intestinal tract should be carefully considered. "The character of the food ingested should be investigated, and the diet thoroughly regulated. The habits of the life of the individual should receive attention, as to the use of stimulants, tobacco, coffee, tea and amusements, and if these are noted in injurious excess, they should be restricted or prohibited. The character and amount of work done, as well as the hours devoted to work, should be considered. The amount of work, rest, and physical exercise should be prescribed, according to the exigencies of the case. Such remedies as are found useful in toning up the general vitiated nervous function are to be administered" (Richardson).

In reviewing the local treatment of the subject, we find many writers advocating a method of treatment which has given satisfactory results in their hands. Since attention was first drawn to the local treatment of vasomotor rhinitis, we find the application of the galvano-cautery to the hyperaesthetic areas, "furrowing" of the inferior turbinals, as suggested by Hack, claims first place. Killian has carried out a similar method of treatment, but used trichloracetic acid, then the correction by operative measures of other and more marked pathological conditions.

Recently Grayson has practised free scarification of the swollen tissues.

Yonge has had satisfactory results from resection of the nasal nerve.

Muck, in a paper published last year, advocates as a prophylactic therapeutic suggestion for vasomotor rhinitis the application of cold water by means of a spray to the back of the neck. The satisfactory result obtained is due to the fact that the dominating vasomotor centre being in the medulla oblongata is stimulated to thermic reflex activity through the stimulation of the skin at the nape of the neck. Relief to complete nasal obstruction is obtained in about five seconds by this method of treatment. Watson Williams has found that spraying the nasal passages with a solution of mercury biniodide (strength 1-10 and 1-20) has proved highly successful in curing many cases. The pain following the application is often severe, and sometimes requires morphine to obtain relief. In suitable cases, if this be efficiently done at the onset of the symptoms of hay fever, the patient will remain free throughout the season.

The application of the positive pole of the galvanic current within the nose and the negative pole to the back of the neck in doses of 3 to 5 milliampères is advocated by some, but has not proved of any value in my experience with it.

O. J. Stein recommends that the nasal branches of the fifth nerve be rendered insensitive by the injection of alcohol into the nasal chambers. Of the anterior group the nasal nerve is first attacked, and later, if necessary,

the posterior group—branches of the spheno-palatine ganglion—are next to be treated. The treatment is carried out by means of a suitably devised syringe fitted with: (1) A straight, sharp-pointed needle to reach the nasal nerve (anterior group) and inserted into the tissues just posterior to the nasal bone—that is, the anterior extremity of the cribriform plate. The posterior group is reached by a (2) longer needle with a curved tip, which is inserted at the posterior extremity and lower border of the middle turbinated body. Five drops of alcohol are used with each injection. In a recent note to me, Stein maintains that he still is obtaining satisfactory results. I have personally given this method of treatment a trial, and the results, so far limited to six cases of vasomotor rhinitis, have been successful.

Constitutional treatment by gradually increasing doses of arsenic, as recommended by Sir Felix Semon, has in my experience proved of great value.

I have tried to lay before you in as impartial a manner as possible, though I fear but imperfectly, a summary of the work done in this subject and representing contributors in this country, on the Continent, and in the United States of America. In conclusion, the work suggests to me the following questions:

1. How far is the so-called neuropathic disposition responsible for the symptoms of vasomotor rhinitis?

2. Are the symptoms referable to an unstable condition of the nervous centres brought about by imperfect metabolic changes within the body.

I wish to express my indebtedness to Dr. Robbins of the Library of the New York Academy of Medicine and to Dr. Allemann of the Surgeon-General's Library, Washington, for research work so carefully carried out.

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II.—E. B. WAGGETT, M.A., M.B., M.R.C.S. Eng.,
Surgeon, Throat, Nose, and Ear Department, Charing Cross Hospital.

PAROXYSMAL RHINORRHOEA AND ITS ALLIES.

You will, I am sure, agree, after listening to Dr. Birkett's admirable and complete opening paper, that it would be out of place for me to take up the time of the meeting in discussing the various remedies and methods of treatment now in vogue. Dr. Birkett's paper brings our knowledge up to date; my wish is to make a suggestion concerning the line of further advance. One might be expected to record personal experiences with the various remedies, but I do not think this would serve any valuable purpose. Here in London, so far as hay fever is concerned, the majority of patients go straight to the chemist's shop and purchase a "remedy," and it is only the really rebellious cases, those that have been the round of the patent medicines, which come into contact at all with the medical profession.

If we had at our command all the members of a numerous community we could no doubt estimate the relative value of the various methods of treatment now practised; as things are we have no means of finding out, at all events here in London, what is the minimum of interference in the typical case, that is to become established as part of our routine treatment. I emphasize the word "minimum," as I conceive it to be quite possible that certain extensive forms of interference may prove invariably successful, and I for one am eagerly awaiting the report which Dr. Yonge will give of the ultimate results of his nasal nerve resections.

My own experience with all the many remedies which I have tried has been both good and bad. There has always been an element of uncertainty, which suggests that the treatment has not been directed to the fundamental source of the trouble. It is our business to dispel that uncertainty, and to discover what it is that determines that certain individuals should be thrown into a state of paroxysmal coryza while their neighbours escape.

It must, I think, be conceded, that there is an essential underlying element common to all cases of paroxysmal coryza, whether it be seasonal or diurnal. In both conditions there is sudden development of nasal oedema with persistent irritation of the nerves. It is quite evident that in the subjects of typical paroxysmal coryza of the non-seasonal type these nasal phenomena are not the outcome of any external irritation. On rising from bed or on commencing their ablutions the matutinal attack commences. The air they are breathing is that to which their noses have become accustomed during the night. Their experience is exactly the same as that of a normal person suffering with a cold in the head, and every one of us must have noticed the fact that when an ordinary cold is upon us, we wake to find our noses clear and free from irritation, but that as soon as one leg leaves the bedclothes we commence to sneeze and realize that yesterday's nasal blocking is re-established. The chill to the leg has immediately induced rapid oedema of the nose, and coincident with this oedema arrives an excessive stimulation of the nasal nerves. The mere presence in the nasal fossae of bacteria and their toxins was unable of itself to produce these phenomena, and I may mention here by parenthesis that even marked rhinorrhoeics sometimes will be entirely free from their old enemy during the existence of an acute catarrhal antritis, though it is giving rise to toxins which are sufficiently irritating to excoriate the skin of the vestibule.

It has been suggested that the nasal nerves in rhinorrhoeic and hay fever patients are excessively sensitive. It is true that all these patients belong to a class in which cultivation and habit have induced somewhat excessive sensibility. But whereas we all examine a great many highly sensitive noses in which the gentlest probing produces the sneezing reflex, these reflexes are not paroxysmal and there is no oedema; a few sternutations occur and the reflex is over and forgotten. Moreover, although we find the nasal nerve-endings more than usually sensitive in the subjects of spasmodic coryza, and though undoubtedly we are able to discover highly sensitive spots distributed in many different areas of the nose, still we never see true paroxysmal sneezing and rhinorrhoea follow directly upon the application of a probe. Some of these patients complain of having passed a miserable day as the consequence of the surgeon's attentions, but their misery does not commence until some hours have passed, and it evidently is not produced at the time of and wholly on account of the mechanical irritation of the mucous membrane. Indeed, the immediate after-results of cauterization and so forth, even when it is to prove ultimately useless, are often enough very satisfactory and lead to false hopes, and in my experience in rhinorrhoeic and in hay fever patients one of the regular after-results of extensive operations in the nose is a complete immunity from all paroxysmal phenomena for a period of three or four weeks. Finally, now that the dusty pastime of motoring is in vogue among the sensitive classes of the community, we know that dust as such does not produce the rhinorrhoeic spasm during the period of exposure. Before leaving this question of the result of direct external stimulation upon the nerve endings I may refer to the effect of bright light which is stated to be capable of precipitating a paroxysm of hay fever. Upon this point I am more than sceptical. Bright light is comfortably tolerated by hay fever patients outside of the hay season, moreover I have never seen the bright light thrown from the forehead mirror on to the eye precipitate a paroxysm of sneezing or nasal oedema in any patient at any time of the year.

I believe I am correct in saying that the ischaemia produced by adrenalin applied locally, is in all persons followed by a reactionary hyperaemia and temporary blocking of the nose. In a certain number of individuals, I believe in all paroxysmal sneezers, and many persons of plethoric or gouty habit, this secondary reaction is accompanied by oedema, rhinorrhoea, and prolonged paroxysmal sneezing. The reaction is quite unlike that observed in normal persons in whom a few sneezes occur without rhinorrhoea during the early stage of the reactionary turgescence, and the essential difference lies in the formation of oedema, in other words, of the abnormal passage of fluid from the blood vessels into the tissues. One is compelled to assume that in paroxysmal sneezers the prolonged titillation of the nerve endings, or more probably of the nerve fibres, which is experienced, is dependent upon that oedema. Is the stimulus the result of mechanical stretching of the nerve structures or of chemical action upon them, or of both combined?

At first sight it would seem that nothing would be easier than to settle this question by experiment, but I have learnt from past experience that experiments of this kind are not only useless but often detrimental, as leading to conclusions which have subsequently to be reversed, unless they are undertaken by men fully equipped with all the knowledge available concerning the whole field of circumstance, and I do not believe that a clinician is very often capable of reading correctly the results of his experiments. Accessory results due to causes which are foreign to the essential purpose of the experiment often overshadow the result which it is our object to discover. The outcome of such an experiment as the one now in question would be very inconclusive unless it were conducted by a man fully alive to all the phenomena connected with the central and peripheral nervous systems, as well as to the reaction of foreign fluids upon all the tissues concerned and upon the normal fluids bathing them. Such a man would confer a great boon to medicine if he would undertake, both upon normal and paroxysmal human subjects, the latter class both during and between their paroxysmal periods, to investigate the effects of the submucous injection of neutral isotonic fluid, normal serum, the serum of hay fever and paroxysmal sneezers both in and out of their period, and also the nasal secretions of these subjects taken at the various phases. Such a set of experiments will at the minimum occupy the investigator for a full year, for the reason that he must spend some time in the elimination of inessential results, and because he must determine the chemical characteristics of a large number of seasonal sneezers before, during, and after their period of intoxication.

It is useless to commence a task of this kind unless some reasonable prospect of a positive result is in sight. It is my purpose in a few minutes to show that a positive result is almost certainly within the grasp of a man fully equipped for chemical and haematological research, and that it is probably within his power to demonstrate one or more abnormal elements or conditions in the body fluids of sufferers. There is a reasonable hope that he may also provide medical science with definite means of detecting the nature of such conditions in any particular patient, and possibly of indicating a fundamentally rational line of treatment.

Is it worth while to set such a research on foot, or are we to be satisfied with our present methods? It must be admitted that the unpleasant phenomena may be excluded in a good many cases by the desensitization of the nerve endings, for weeks or even months, by means of the cautery, blasts of hot air, and by powerful applications such as those of quinine, carbolic acid, biniodide of mercury, and so forth; or in a more temporary fashion by local anaesthetics. The oedema may be kept at bay by adrenalin and other constricting agents acting upon the blood vessels, either applied locally or by prolonged internal medication; or, again, by the submucous injection of paraffin or by scarification. The toxin of hay fever may be neutralized by the admixture of antitoxin with the pollen toxin before it penetrates the epithelium; but if this is to be effectual the application must be made as often as the toxin is inhaled—that is to say, perpetually during periods of exposure. Antitoxin, again, may be supplied through the blood system by subcutaneous injection, but here we are met with the difficulty that repeated injection of horse serum induces hypersensitiveness to that fluid and unpleasant phenomena. Auto-immunization also may be attempted by the prolonged use of the various vegetable or animal—that is, in horse rhinorrhoea—toxins, but it has not, I gather, proved successful.

The underlying problem, however, remains unsolved: Why do certain persons react to poisons which are to others innocuous, by developing nasal oedema with its distressing consequences?

These persons differ in some unknown but remarkable manner from their fellows, and it is our business to detect the underlying basis of their peculiarity and, if possible, to redress it. In all the realm of medicine there is no disease in which the problem of personal idiosyncrasy is

more strikingly presented. Two men in robust health enter a hay field. Both equally inhale the pollen, both equally have been exposed to it throughout life. One is prostrated, the other remains untouched. We must not rest content merely to call the former a sensitive, still less to label him a neuropath. It is my purpose to suggest that he is no more worthy of that title than is a haemophiliac, and it will, I predict, ultimately be proved that the susceptibility to paroxysmal sneezing has a chemical basis in which the body fluids in general are concerned. The disease at bottom is in no real sense a nasal or a nervous one.

Dunbar has shown that if pollen-toxin is injected into the arm of a hay fever patient, all the symptoms of that malady are produced. In ten minutes severe sneezing and copious rhinorrhoea commence, with swelling of the nostrils. Injection of the conjunctiva and chemosis develop, and within an hour intense asthma supervenes. After two hours large urticarial wheals appear over the whole skin, associated with violent itching. Next morning the nasal and ocular symptoms have disappeared, there is no rise of temperature, nothing but a passing toxaemia with peculiar manifestations, all associated with oedema. The same injection into a normal person produces no specific evidences of irritation. Wherein lies the difference? It will not do merely to say that the elements of the neuro-vascular and of the sensory systems of the one are hypersensitive, nor can we invoke a hypothetical nervous sensibility specific to the toxin. There is something more than this, for Dunbar has proved by numerous experiments upon many persons, that the blood corpuscles of hay fever patients are laked by pollen-toxin, whereas those of normal subjects are not. The blood constituents must therefore be included in the problem.

Again, with regard to ordinary diurnal paroxysmal coryza, the attacks generally bear a distinct relationship in time to periods of sleep. It is the rule for them to commence on rising or shortly after, and even in typical matutinal sneezers a second attack in some patients occurs invariably after a midday nap. It is known that the body fluids of the sleeping and waking states differ, and the early morning urine is stated to contain convulsive substances and that of the evening to contain narcotic elements. It appears that in certain persons these chemical fluctuations are attended with distressing nasal symptoms; in other persons by none whatever.

It is well known that general itching of the skin, and even the development of wheals, are observed in hay fever patients as the culminating symptoms of an unusually heavy dose of pollen. Urticaria is also frequently found associated with spasmodic rhinorrhea. Many rhinorrhoeics suffer with it, and the majority give a previous history of urticaria in their earlier years, and it figures prominently in the family history given by these patients. Urticaria is produced by the subcutaneous introduction of pollen-toxin into the system, and indeed by the mere application of the toxin to the skin in hay fever patients. Urticaria also occurs in certain persons upon eating even small quantities of certain fruits and shellfish. Now it has been shown by Wright that urticaria is associated with a deficiency of lime salts in the blood, and that the supply of an excess of calcium in the ingesta will in many cases prevent the skin eruption. It is certain, therefore, that in urticaria an essential element is a condition of abnormal chemistry, resulting in the abnormal transference of fluid through the walls of the capillaries. Paroxysmal nasal phenomena not only bear a striking resemblance to urticaria, but are, as I have said, in many cases associated with it. Is it not probable that paroxysmal nasal oedema is a true urticaria, and may it not be investigated upon the lines that have proved valuable in the skin malady?

For some three or four years since hearing of Wright's work on urticaria I have treated a large number of paroxysmal sneezers with calcium lactate administered internally, and in the majority of cases with success, and almost always with modification of the symptoms. I purposely avoid giving figures, for the reason already mentioned, that I believe them to be unreliable and misleading. Certainly all my cases have not been successful, but one may add that it is known that calcium is absorbed with difficulty by some individuals. Some cases have reacted favourably only to repeated large doses, others only when magnesium as well as calcium was administered. These salts, and particularly calcium, influence, as is well known, the coagulability of the blood; but the coagulability rate does not represent the whole story in skin and nasal urticaria, for haemophiliacs with a deficient calcium index are not specially prone to these disorders. I do not, therefore, myself believe that in calcium we have a specific for all cases of paroxysmal nasal oedema.

What influence it exerts upon hay fever I do not know. It has been my custom for some years to order this drug, but at the same time to apply the galvano-cautery to spots in the nose specially sensitive to irritation by the probe, and probably, therefore, to the mechanical or chemical effects of oedema. So far as I know, the results of such treatment have been excellent where the classical precaution has been taken of applying the cautery at least three weeks before the flowering of the hay. This year, however, this treatment has been disappointing. The fact that the grass blossomed a fortnight before its usual season may have some bearing upon this experience, but I am inclined to think that the excessive output of pollen in a short space of time had more to do with it. This year the daily pollen dosage, at all events in the South of England, was above the normal, and certainly doses of 20 grains of calcium lactate a day produced no notable check upon the symptoms in certain of my patients with whom I have been in close touch.

However that may be, it is pretty clear that it is not yet proved that the mere ingestion of moderate doses of calcium is in itself sufficient to control all cases of nasal urticaria under all conditions, and we still have a gap in our knowledge which must be bridged; the important point to bear in mind is the definite fact that a large proportion of spasmodic rhinorrhoeics can control their symptoms so long, and just so long, as they take this drug. This is sufficient to prove that the phenomena are associated with blood chemistry, just as the local oedema of skin urticaria is dependent upon the saline contents of the blood.

I suggested just now that an investigation should be made into the manner in which nasal oedema produces irritation of the nasal nerves. I put it that a much more valuable investigation will be an exhaustive one into the blood chemistry of the subjects of paroxysmal coryza, whether it be diurnal or seasonal.

What I have already said concerning calcium suggests the probability that such a research will result in the discovery that the vulnerability of certain persons to mild intoxication by substances which are to the normal man innocuous, is associated with—dare I say dependent on?—the relative poverty of the blood in some simple mineral constituents. In the light of what we know of the need of salts throughout the animal kingdom—the reindeer who must have his drink of brine, and so forth—such a discovery would not be surprising. The investigation may, it is true, prove that it is not a question of deficiency but of excess, and that the substances involved are neither mineral nor simple, and certainly the investigation must be followed by a further one, first into the means of rectifying the abnormal chemistry, and secondly, into the manner of detecting and perhaps of correcting the cause of it.

I can hear it said, "You are proposing nothing short of an attempt at discovering the basis of susceptibility and of personal idiosyncrasy. It is a matter for the philosophical pathologist, aided by the chemist. Why bring the matter forward at a rhinological discussion?" For this reason. We have in hay fever a widespread disease which we do not understand though it is entrusted to our care and for which we are responsible. It is, moreover, a disease extremely well suited for experimental investigation, seeing that the symptoms are remarkably distinct and of short duration. The areas involved are easy of access and even of microscopic examination. The symptoms can be produced at will at all seasons of the year within the walls of a laboratory without danger or serious suffering. The clinical material is abundant, and the subjects belong to a class which has proved itself ready for self-immolation upon the altar of truth.

Rhinology has been accorded a generous welcome by the older branches of the profession, and we owe a debt to general medicine. It is, I contend, within our power to furnish repayment through the medium of a hay fever

investigation. If the investigation bears no fruit, well and good; no one will have been killed by it. If it is successful, we shall not only have done our duty by our patients, but we shall, maybe, furnish science with a clue to the problem of pathological idiosyncrasy, and perhaps revolutionize a considerable section of medicine.

The first step is the attempt to convert the man susceptible to pollen into a normal person. It is only a step further to detect beforehand susceptibility to more serious diseases, and one step more to correct the susceptibility before danger threatens. This last has been the dream of every thoughtful doctor from the time he walked the hospital, and it partakes of platitude to mention it; but the purpose of my paper is to suggest that it is within your power, Mr. President, to set the first step in motion, and upon a very promising path, by encouraging us this morning to place our knowledge, our clinical material, and some money at the disposal of a biological laboratory.

We shall have justified our choice of this subject for discussion if at this meeting we institute a competent research into the basis of paroxysmal rhinorrhoea, and do not rest content merely with the multiplication of palliative measures.

III.—Alexander Francis, B.A., M.B., B.C.Camb., M.R.C.S.Eng.

THE EFFECT OF NASAL CAUTERIZATION IN VASOMOTOR NEUROSES.

The treatment of asthma by nasal cauterization has now been so generally adopted that it is hard to realize how great was the incredulity with which my original paper, read before the Clinical Society in 1902, was received. Reports of the ensuing discussion are given in the British Medical Journal and the *Lancet* of October 18th, 1902. Mr. Tilley said that the statistics and statements in my paper were astounding. He pointed out that at the discussion on asthma in relation to the upper air passages at the Laryngological Society of London on May 5th, 1899, the meeting was attended by physicians and surgeons of London, Edinburgh, and other cities, and yet only nine cases of asthma were recorded at that meeting as cures, or as obtaining very great relief from intranasal treatment. The general opinion seemed to be that if asthma was associated with gross nasal lesions, such as polypus, marked deviation of the septum, or spurs or crests growing therefrom, or hypertrophic rhinitis, or if the paroxysm was preceded or accompanied by nasal symptoms, then it might reasonably be hoped that the removal of the lesion would remove the lung trouble. He further stated that my paper compelled them to put their ideas again in the crucible because I told them the best results were obtainable when the nasal cavities appeared healthy. Dr. Dundas Grant said that he echoed the astonishment expressed by Mr. Tilley. Dr. Greville MacDonald admitted that he was quite at a loss to explain the remarkable results I had recorded, and stated that no one in this country had hit upon the simple method of treatment advocated by me, but after my paper he would approach these cases with new hope for the patient.

In spite of the hope expressed by Dr. Watson Williams in a letter to the British Medical Journal (November 8th, 1902), that my contribution would not lead to the general adoption of intranasal cautery as the panacea for paroxysmal asthma, because there are so many "cures" for asthma, I believe there are few countries where the treatment is not now practised. I am in receipt of reports from America, Australia, New Zealand, India, Africa, besides European countries, of the success obtained by my method of treatment, and there are undoubtedly thousands of persons who have been relieved of asthma by this means.

In my original paper I gave the notes of 402 cases treated in Australia. Of these, 194 were known to have obtained complete relief, while 30 more were well when last seen, and great improvement was obtained in 123 cases, showing that the results were more or less satisfactory in 86.3 per cent.

I now have notes of 1,066 cases treated in this country, and I can claim that the results are quite as good as those of the former series as far as the general average of improvement is concerned, although a somewhat smaller proportion has obtained absolutely complete relief.*

The great difficulty has been to find a reasonable explanation of the effect so constantly observed. Many of the results are so sensational, and the effect on the asthmatic condition is so altogether out of proportion to the apparently trivial operation performed, that at first one cannot help feeling that much must be due to suggestion.

For instance, a man was sent to me on August 5th, 1909. On account of his difficulty in breathing he had been able to do no work for ten years, during the whole of which time he stated that he had spent the nights in a chair with his arms and head resting on a table. He said he could not walk 100 yards in a day. His hair was perfectly white, which he explained was due, not to old age, for he was only 36, but to suffering. He experienced instant relief on my cauterizing his septum nasi, and from that time he has had no return of asthma, and, although he was previously subject to colds and bronchitis on the slightest provocation, he now in the course of his work is exposed to all kinds of weather, and often gets wet through without suffering any ill effects. In a letter dated June 2nd, 1910, he states:

"I have felt no more of the asthma since I saw you than if I had never had it. I have to work very hard at my trade as a butcher, slaughtering single-handed, and am often at work seventeen hours a day."

The first case I ever had was as striking, and in this there has been no slightest return of the asthma for over thirteen years. There is, however, strong evidence against suggestion playing any part in the treatment. Thus:

1. Many of the best results are obtained in the most incredulous patients.
2. Good results are obtained in children who are too young to know the object of the treatment.
3. In some cases good results are obtained after prolonged treatment when the patient has given up all hope.
4. Frequently relief is obtained by the lightest touch, although the patient had been previously cauterized severely without any benefit.
5. Some operators who are unsuccessful at first become proficient when they have mastered the details of the technique.

I very soon realized the fact that the prognosis was better the more normal the nose appeared, the more free it was of hypersensitive spots, and particularly when there was no sign of polypus or polypoidal degeneration. Consequently I was obliged to exclude the theory that relief was obtained as the result of the removal of irritation in the nose, which by reflex action was responsible for the asthma.

That relief is obtained, as is so generally supposed, by a counter-irritant effect is not supported by the fact that the more lightly one cauterizes, and the less after-irritation and reaction are produced, the better is the result.

In my book, *Asthma in Relation to the Nose*, written in 1903, I tried to show that there must be some connexion between the nasal mucous membrane and the respiratory centre, whereby the stability of the centre could be increased by the nasal treatment. But at that time I was persuaded that asthma was due to spasm of the bronchial muscles. Dr. Francis Hare has proved so incontrovertibly, I consider, that asthma and the other paroxysmal neuroses are dependent upon varying vasomotor conditions, that I am compelled to seek other explanation.

Some years ago Hare suggested that if my method of treatment could relieve an asthmatic condition, it ought to be of use in the other paroxysmal neuroses. Consequently, my friend Dr. W. N. Robertson, of Brisbane, and I employed the treatment in a number of cases of angina pectoris with surprising results. Dr. Robertson, in a paper in the *Australian Medical Gazette* of January 20th, 1906, refers to 13 cases treated by him in this way. There was marked improvement in all, and in some the seizures entirely ceased.

In 1907 I saw a lady who was suffering from distressing angina. Her father had died suddenly of a heart attack. In 1904 she had a severe breakdown which was attributed chiefly to heart weakness. In the following year she suffered a great shock from a family bereavement, and from that time the heart trouble became greatly aggravated. In April of 1905, to quote her own words—

*Results:

Total number of cases, 1,066—		
Complete relief	550, or 51.59%	86.4%
Great improvement	372, or 34.89%	
No relief or lost sight of	144	

"On opening the front door a cold blast of air seemed to strike my chest, as if I had received a heavy blow. I was seized with an agonizing squeezing cramp in my chest, which forced all breath out, and yet I dared not try to take any in. I remember hardly anything but the struggle, which insisted on being met to get action in the heart regions, until at last I found myself wet through with exhaustion, cold, and fright." When she had had four more of these attacks her doctor told her she was suffering from angina pectoris, and warned her that unless she took more care another seizure might not be overcome. From this time she suffered pain in her heart, neck, and left arm whenever she moved hurriedly, and the paroxysmal attacks gradually became more frequent and occurred without any unusual exertion or strain. One seizure which I witnessed in 1907 was the most severe attack I have ever seen. Her suffering was distressing to watch. She was speechless, her face was drawn and pinched, her lips and eyelids were almost black, and in spite of the free use of amyl nitrite her pulse was barely perceptible, but was felt as a hard thread. After some time there was relaxation, she came out in a profuse sweat, the pain subsided, and she lay in a state of complete exhaustion. I cauterized her nose as if for asthma, and the relief has been immense. In a letter written May 31st, 1910, describing the effects of the treatment, she says, "I began to sleep comfortably in a recumbent position, and the attacks got far less frequent and severe. I have done a lot of work, and can take exercise with enjoyment. It may interest you to know that my circulation is now quite good, my hands are never the blue colour they used to be, and my lips only get blue when I am tired. I take my meals without being left cold and damp, and I am really a different woman." She had an attack last September and another in April after exposure to cold winds, but these quickly yielded to amyl nitrite which previously gave but tardy relief. She has gained a stone in weight during the last two years, and can now walk fast and go upstairs without fatigue or discomfort.

I have given this case in greater detail than was perhaps necessary, but one is apt to regard any case of angina pectoris which shows marked improvement with suspicion, and to think that probably the original diagnosis was wrong and that one had to deal only with a form of pseudo angina or hysteria.

With regard to migraine. In 1900 I published a paper on the relief of headache by removing pressure of the middle turbinated bodies on the septum, and gave a number of instances. Dr. Hare has suggested that it was not necessarily the removal of pressure that gave relief, but that the operation produced a vasomotor effect similar to that obtained in the treatment of asthma. He maintains[1] that the pain of migraine is due to vascular distension at the seat of pain, which vascular distension is compensatory of a widespread vaso-constriction, particularly of the cutaneous area. That is to say, the mechanism of the pain in migraine is identical in principle with the mechanism of the dyspnœa of asthma. Consequently I attacked cases where there was no turbinated pressure, and the results seemed to confirm Hare's views.

Thus, on August 11th, 1909, I saw a lady who had been subject to attacks of migraine all her life. Her distress became so great that in 1905 she was given a mixture of 30 grains of potassium bromide and 20 grains of sodium salicylate to be taken every night. In 1907 she ceased to take it for three months, but was obliged to resort to it again on account of the severity of the pain, and from that time until I saw her in August, 1909, she had taken it daily without intermission. In spite of this drugging she was never quite free from head pain, frequently had paroxysmal attacks of great severity, and always felt heavy and dull. She had no middle turbinated pressure and I cauterized her septum as if for asthma. She tells me now (June 18th, 1910) that she remained absolutely free from headaches until April 11th, which was a longer interval than she had ever had before. Since then she has had two other attacks.

Then, again, Raynaud's disease. On August 22nd, 1906, I saw a lady, aged 18, who had suffered from cold feet from infancy. For some years her feet at times during the cold weather, to use her mother's expression, "died and went like alabaster." This condition was always accompanied by a violent headache, which, however, ceased as soon as her feet again became warm. During the winter before I saw her her hands and feet had died off on five or six occasions. I cauterized her as if for asthma, and since that time not only has there been no recurrence of the trouble, but she has not even suffered from cold extremities, and has had no headache.

On September 25th, 1907, I treated a patient for asthma who also complained that she had suffered during the last few years from mucous diarrhœa, often passing three or four mucous stools a day. I advised her to consult a physician, as she was evidently suffering from mucous colitis. On her next visit she told me that she had not done so, as her trouble had entirely disappeared. Although it took a considerable time before her asthma was relieved, she only once subsequently, about six weeks later, had any return of the colitis, and that lasted for three days only.

These cases not only confirm Hare's contention that the pathology of the paroxysmal neuroses is identical in principle, and that asthma, like the others, results from a disturbance of the vasomotor equilibrium, but they also tend to supply an explanation of the mode of action of nasal cauterization.

For some time past I have been in the habit of systematically taking blood pressures before and after cauterizing the nose, and the results are striking. The practical point is that I find it is possible to raise or lower a patient's blood pressure by cauterizing different spots in the nose. In cases of abnormally high pressure it is easy to get an initial fall of 20 mm. of mercury, and although the pressure tends to rise again, it does not usually reach the original level, and by persevering with the treatment an ultimate reduction of from 20 to 40 mm. can usually be obtained. On the other hand, I find it is possible to raise the blood pressure, but this is a less certain result than the reduction. I believe that this reduction of an abnormally high blood pressure is responsible in great measure for the extraordinary improvement often experienced in a patient's feeling of well-being after septal cauterization, which is greater than could be expected to result from the slight mechanical freeing of the nasal passage and the consequent improved air supply.

It is impossible to say at present how this effect upon the blood pressure is produced, but there is evidence that it is due to vasomotor action, through the sympathetic on the cutaneous vessels. At all events I have little doubt that it will be found to supply the solution of the mystery of the connexion between nasal cauterization and the paroxysmal neuroses.

Dr. Pierre Bonnier has published a series of papers in French journals and a recapitulation in *La Revue*, under the title of "The Direct Action on Nerve Centres." He gives some extraordinary results of nasal cauterization in a wide range of troubles, and suggests that the nasal mucous membrane is to be looked upon as a telephonic exchange board, and we have to learn where to insert the pin in order to get connexion with the various centres. Thus he states the more the centre aimed at occurs low in the bulb, the more anterior in the nose is the spot to be touched, and so on. In a general manner he deals with all the chief centres, giving the approximate spots in the nose which communicate with them.

I think that all this can be explained by the action of nasal cauterization on the vasomotor system; for, after all, vasomotor disturbance is at the bottom of most ailments.

Dr. Bonnier rightly emphasizes the point upon which I have laid the greatest stress for the last thirteen years—namely, that one cannot cauterize too lightly. The merest touch which causes no local irritation or reaction is the one which produces the best result. I feel that I ought to sound a note of warning against indiscriminate nasal cauterization. When one sees what profound and diverse effects a touch with the cautery can produce upon the vasomotor system, it is necessary to proceed with caution and with some knowledge of what the effect is likely to be.

REFERENCE.
[1] *Food Factor in Disease*, 1905, vol. i, p. 277 et seq.

DISCUSSION.

Dr. STUART-LOW (London) said that he did not consider the title, "Vasomotor Rhinitis," for the subject under discussion at all a good one, and was surprised that those responsible for the selection of a topic for discussion should have adhered to such a nondescript and unsatisfactory nomenclature. In all forms of rhinitis there was more or less vasomotor disturbance. The name "vasomotor" conveyed nothing distinctive or conclusive regarding the nature or pathology of this distressing and intractable form of rhinitis. Many cases that he had seen and treated presented two troublesome symptoms, namely, frequent and paroxysmal sneezing and profuse watery discharge from the nose. Doubtless, both of these symptoms resulted from reflex actions commencing in stimulation of the intranasal nerve terminals, starting centripetal impulses, which, in return, were received by unstable and overexcitable nerve centres. Such nerve centre instability was often indicated by want of self-control of the patient, inability to keep the head steady, hyperæsthesia, and fractiousness during examination. This was the type of individual most liable to suffer from

vasomotor rhinitis and paroxysmal sneezing. Such being the state of the centres, in what condition was the periphery of the reflex nervous arc? It was in a state of irritability, hyperaesthesia, and, probably, congestion, and from his observations he considered that such changes in the peripheral nerves resulted from over-stimulation brought about by insufficient protection of the peripheral nerves from deficiency in the normal amount of protective covering. The mucous membrane lining the nose and throat being thin, did not sufficiently shield the nerves, and very easily became congested. This either occurred generally or in localized portions, and wherever it took place one result invariably followed, namely, a vast outpouring of serous fluid, and so the rhinorrhoea was largely accounted for; but accompanying the interepithelial serous transudation was a profuse secretion from Bowman's tubular glands in the upper regions of the nasal cavity. The mucous secretion was not only not increased, but invariably diminished, because in all conditions of thinning of the mucous membrane there was a semiatrophy of the mucous secreting glands. This was what he called hypomyxia. The deficiency of mucus in the noses of susceptible individuals also meant lessened protection of this sensitive lining from dust and variations of temperature, and helped very greatly to bring about the peculiar attacks to which they were so liable. Most of these people not only showed the indications of thinning of the mucous lining in the throat, pointed uvula, thin faucial pillars, and large vessels on the pharyngeal walls, but from a similar mucus deficiency and desiccation in the stomach were martyrs to dyspepsia and gastritis, and this undoubtedly helped reflexly to disturb the nasal secreting functions. Anything diminishing the protective mechanism of the lower regions of the nasal cavity, and especially the efficiency, continuity, and consistency of the inferior turbinals, by exposing the upper parts of the mucous membrane to dry, irritating, and dust-laden air, was indirectly an infallible factor in bringing about rhinorrhoea and paroxysmal sneezing. Now, two procedures, still very much in vogue with many rhinologists as panaceas for all the ills that the nose was heir to, namely, the application of the galvano-cautery, and anterior turbinectomy, were indubitably deteriorative to turbinal functional efficiency. Many of the patients that he had encountered suffering from rhinorrhoea and paroxysmal sneezing had had either the galvano-cautery severely applied to the anterior ends of the inferior turbinals, or had anterior turbinectomy only too completely performed. He was sure that such treatment was reprehensible and to be sternly reprobated.

Dr. Scanes-Spicer (London) said that the term "vasomotor rhinitis" was a bad one for those hay fever and pseudo hay fever cases, since very often inflammation did not enter into the matter at all. He would prefer some non-committal term, such as "vasomotor coryza." Mr. Waggett's suggestion that some mineral constituent of the blood was diminished in vasomotor coryza was well worthy of consideration. Salts of calcium chloride and lactate were being used four years ago in certain cases of rhinorrhoea by Sir Almroth Wright at St. Mary's Hospital; but, in spite of large doses, the results were negative. In some of these states the speaker had found very small doses of potassium iodide and of mercury of occasional use. Morphine and atropine were, as was well known, almost specific in giving relief in these reflex neuroses. Probably, however, the blood change was rather one of excess, deficiency, or perversion of one or more of the internal secretions. At other times it was probably a retention of waste, as in "gouty coryza." In spite of the possibility of some important blood change the symptom complex of vasomotor coryza, asthma, and nasal neuroses generally, and the results of treatment showed that these states were essentially derangements arising in the peripheral end-organs and smaller nerve filaments in the nose, and were to be explained on the well-known physiological principles of persistence of irritation, summation of stimulus, and irradiation or overflow of centripetal impulses reflexly on to neighbouring efferent tracts. All rhinologists welcomed Dr. Francis as a co-worker in the field of reflex nasal neuroses, but if every rhinologist used the terms "asthma" and "cure" in the same haphazard way each could claim scores of cases with similar favourable results, more especially if he limited his reports to noses in which there was so little lesion that the nose could be spoken of as "normal." There was no necessary connexion between severity of nasal disease and severity of paroxysm, for in certain noses usually more or less deformed internally the slightest swelling from a cold, or portal congestion, would cause the most aggravated and long-standing attack. Further, many asthmatics were relieved permanently to an extent that they called cure, after failure of the galvano-cautery, by thorough rectification of intranasal disease. The rhinologist, however, should refrain from stating that he can "*cure asthma*," for he could not *guarantee* to *find* and *remove* every source of irritation in the nose, nor could he guarantee the permanence of the immense improvement he produced in every suitable case, and which he could repeat if necessary. Dr. Francis said that the less the abnormality in the nose the lighter the touch of the cautery, and the less the reaction the greater the relief. Every rhinologist knew well that with lesions so trifling as easily to be corrected by the cautery miraculous instantaneous relief was sometimes procured, but it was quite a different matter when there were complicated nasal disease and continuing sources of irritation; then the most serious demands were made on the perseverance of both practitioner and patient. The rhinologist also knew that it was impossible to fix on any spot absolutely on the septum or elsewhere, but that the right spot had to be found by trial and the cautery often repeated. The experienced rhinologist frequently had a good guide in increased sensitiveness to touch, in localized swelling, in abnormal contacts, in undue approximation of parts, or from considering the track of the main nasal nerves or their terminal distribution areas, and these were then attacked with success. Dr. Francis's paper afforded no further clue for the recognition or localization of any definite spots from the cauterization of which cure of asthma could be infallibly produced. He acknowledged there must be an empirical "groping" for these spots. What was this but searching as all did for the special "hyperaesthetic areas" in that particular case?

Mr. N. C. Haring (Manchester) said that it was quite evident that the disease under discussion belonged to the class of paroxysmal neuroses, and that any element of catarrh which might be present was merely an addition to, but not an essential portion of, the symptoms. Migraine, nervous skin lesions, and epilepsy were the diseases which, with paroxysmal rhinorrhoea and asthma, seemed to form a fairly well-defined group of nervous diseases which were related to each other, both as occurring in different members of the same family and also often replacing each other in one individual. (Thus a patient might at various times suffer from one or other of these paroxysmal neuroses, and close examination of the family history showed an unusually large crop of neurotic lesions in closely-allied relatives.) Of the three factors in paroxysmal rhinorrhoea—(1) Central nervous instability; (2) excessive irritability of the nasal mucosa; (3) peripheral irritant—the factor which appeared to him to be the dominant one was the peculiar readiness of the central nervous system to be excited, and to respond tumultuously. Of the second factor one might say that many patients at least appeared to have an unduly sensitive nasal mucosa and yet did not suffer from the lesion under consideration. Of the third factor—a peripheral irritant—the well known action of irritant particles, such as pollen, rather tended to mislead one in estimating this as a causative factor, for it was quite evident that (as Mr. Waggett had pointed out) at any rate the matutinal attack, which occurred on getting out of bed, had no relation to any such irritation of the nasal mucosa, and was probably due to a vasomotor disturbance set up by change of position and sudden change of temperature of portions of the body surface. For purposes of treatment the cases fell into two well-defined classes—those with nasal lesions and those without. Nasal lesions, such as polypi, hypertrophies, deflections of the septum, and ulcers, were evidently to be treated, and one might expect a fair amount of amelioration if not cure. The treatment of the cases without any obvious nasal lesion was a more difficult matter altogether. The application of the cautery to a normal nasal mucosa was as likely to give relief as any manipulation which impressed

the patient and acted as a powerful "suggestion." One case of his had shown cessation of attacks of asthma, which were occurring twice or three times a week, for a period of about twelve to fourteen months after passage of the bronchoscope; the patient came back about every twelve months and asked to have the instrument passed, as she then felt secure from attacks for some time to come. The woman was neurotic but not hysterical, and one could hardly see why such a result should be obtained unless a powerful suggestive influence enabled the irritable central nervous system to maintain, at any rate for some time, a more regular vasomotor control.

Dr. STCLAIR THOMSON (London) shared in the objection to the title given to the condition under discussion. Doubtless vasomotor action was a part of the phenomena, but it had not established itself as the *causa causans*. Unfortunately, an appeal to vasomotor action was rather a refuge for the pathologically destitute, and was apt to be invoked as an explanation of the still unexplainable. He thought it better for them to confess their ignorance than to lull themselves with false theories. He shared in the gratified astonishment at the results obtained by Dr. Francis. Others could only have failed through some fault of technique; yet the manipulation of such a simple proceeding as cauterizing the septum should not afford insurmountable difficulties. Perhaps Dr. Francis would, by a diagram or demonstration, show exactly what his procedure was. It was not a sufficient objection that his method was empiric. This objection might be raised against many other methods. It was certainly a harmless, and not unpleasant, form of remedy. In conclusion, he was inclined to support Mr. Waggett's prognostication that progress was to be looked for from a study of the condition of the blood and the internal secretions. The alternations of paroxysmal sneezing with asthma or other so-called neuroses supported this idea. Local conditions were contributory, but evidently of secondary moment.

Dr. WATSON WILLIAMS (Bristol) said he believed that a proportion of the cases of the neuroses under discussion were due to bio-chemical changes in the blood affecting the bulbar centres and that such blood changes might be toxic in character or might be due to exaggerated physiological variations in the blood conditions. But in the greater number of cases he was quite convinced there existed some organic affection which was at least sufficient to act as a peripheral source of irritation. He ventured to doubt the accuracy of Dr. Haring's interpretation of the favourable result in a case of asthma from the passage of a bronchoscopy tube, and he (Dr. Watson Williams) did not think the beneficial effect due to suggestion. They probably attached too little importance to the physiological action of nasal stimuli on normal respiration, but they should not be forgotten, and in the same way, as was fully recognized by physiologists, the direct action of the air on the alveoli and bronchioles had a reflex action on the respiratory centres. And just as direct stimulation of the nose influenced the bulbar centres—for example, by the galvano-cautery—so might stimulation of the bronchi, as in Dr. Haring's case, and there were many cases where repeated attacks of bronchitis led to more or less persistently recurring asthma by indirectly influencing the respiratory mechanism. With regard to galvano-cauterization of the nose Dr. Watson Williams had many years ago noted the beneficial effect that followed in asthma from galvano-cauterization, and for a time he regularly cauterized the septum above the tubercle and the middle turbinate of all his cases. But he soon realized that the effect was generally but temporary, and in 1896, in an article on asthma,[1] he stated his conviction that nearly every case of asthma, whether there was a nasal lesion or not, would markedly improve from such galvano-cauterization. But he did not advocate the routine galvano-cauterization because he thought in many cases slight organic lesions did exist, and if they did not he was more strongly convinced that the effect was but transient and that it was of infinitely greater importance to depend for permanent results on general treatment and hygienic measures, etc.

Dr. LUC (Paris) said that he must confess that he had abstained systematically hitherto from any local treatment in cases of asthma or hay fever that did not present obvious nasal lesions; but it was the result of his experience that some patients who seemed to have no such lesions were in reality subjects of a latent form of myxomatous degeneration of the mucous membrane of the nose, that latency being due to the small size and deep seat of the myxomas; they were hidden under the middle turbinal, where they could only be detected after a prolonged (ten minutes') application of cocaine and adrenaline in that region. He had found such lesions in patients complaining of hay fever or asthma or simply with a deficient nasal respiration and frequent acute catarrhs, and he had found that removal of the middle turbinal and its underlying myxomatous tissue gave the best results, some cases being completely relieved by this means.

Dr. PEGLER (London) read brief notes of a case (typical of many others), suffering from paroxysmal rhinorrhoea, which he had treated with local application of glacial acetic acid.

The patient had been in the habit of using about twelve handkerchiefs per day, and at night it had been necessary to fasten layers of handkerchiefs round the head and face in order to mop up the copious watery discharge. There were attendant emaciation, languor, migraine, and much constitutional disturbance. After preliminary cauterization of the inferior turbinals, which were chronically inflamed and tumefied, and refused to contract under cocaine, paintings of glacial acetic acid were applied to the surface of the septum (after 20 per cent. solution of cocaine) and the free border of the middle turbinal, piece-meal, first on the right, and afterwards on the left side. As usual, the mucous membrane affected by the acid peeled off a few days after the applications, and the under surface healed very kindly. With the advent of this result, the rhinorrhoea gradually abated and the general constitutional disturbance disappeared. The treatment was carried on eleven years ago, and an excellent result was still maintained, as proved by a report sent in a few days ago by the husband of the patient, himself a medical practitioner.

Other cases either quite as successful or nearly as much so had been treated in a similar manner during the interval. The result was due in some way to counter-irritation, on the lines of a class of treatment much less adopted at the present moment than formerly and which had not been satisfactorily explained. He supported Dr. Luc when he remarked on the great service rendered by cocaine or adrenalin in enabling one to detect latent lesions in the nose, and to distinguish between simple erectile tumefaction of the turbinals and swelling due to a chronic inflammatory condition.

Dr. ANDREW WYLIE (London) said they had listened to excellent papers discussing the causes and treatment of this ailment, but had attained no definite result. One cause none of the speakers had mentioned was astigmatism. Many patients, who could not be relieved on being sent to an oculist and having their refraction corrected, were cured. Occupation had a great deal to do with this rhinitis. Clerks hanging their heads over desks, furriers, those working in mills, etc., were severely afflicted, and the treatment, therefore, was to change their occupation. This form of rhinitis was found very commonly in young men due to sexual excitability, and in these cases the galvanic cautery should not be employed. A great many cases of rhinitis would be cured if all the sufferers had to earn their food and bed.

Dr. PERMEWAN (Liverpool) said he thought there was a danger of their giving up local treatment in these cases. He personally had no doubt that cauterizing, but preferably by a chemical caustic, did much good. As regards Dr. Francis's method, he hoped that Dr. Francis would give them a demonstration of the exact method he employed, as others generally failed to obtain such good results. In this connexion he had had a successful case, which was much relieved by submucous resection of the septum. This possibly acted by removing the hard, resisting septum between the two middle turbinates, and might be justifiable in some cases. The use of large doses of the salts of lime, preferably the lactate, often gave relief in these cases, and deserved a further trial.

Dr. IRWIN MOORE (London) wished to confirm Mr. Stuart-Low's experience of the advantageous use of adrenalin, injected in 2 to 3 minim doses under the skin, in cases of

[1] On Asthma, Watson Williams, *The Hospital*, June, 1896.

asthma. The relief of the spasm was almost immediate. He referred also to a paper written some years ago on the use of the nitrites by Sir Thomas Fraser, of Edinburgh, and he wished to mention the great success which he had obtained for a number of years by spraying a solution of sodium nitrite into the bronchial tubes in cases of asthma.

Mr. Charles A. Parker (London) wished to support Dr. Francis's particular method of applying the cautery. It was quite true, as Dr. Scanes-Spicer had said, that there was nothing new in the idea of using the cautery for the treatment of asthma, but the method was new, and Mr. Parker was confident that it gave far better results than the older methods. There was no reason in refusing to adopt it because its action could not be explained. It generally relieved and often arrested the attacks of asthma, and, after all, that was what our patients wanted. He would lay stress on the importance of making a very superficial and limited burn in the region of the tubercle of the septum.

Dr. Tilley, the President, said he took the responsibility for the title, which was adopted to prevent the discussion from falling into that of asthma. He quite agreed with Mr. Stuart-Low that the use of adrenalin was not free from danger. He considered that Dr. Francis had focussed attention upon the subject of his nasal treatment, and though the speaker had used it his results were not so good as Dr. Francis had obtained. He would like to hear more of the technique of the discovery and as to the correct areas to cauterize.

Dr. Birkett, in reply, said he had appreciated the manner in which the subject had been received and discussed, and he was in agreement with Mr. Waggett's suggestion with reference to further investigation.

Mr. Waggett also thanked the meeting.

Dr. Francis, in reply to Mr. Stuart-Low, said he thought there was considerable risk in the indiscriminate use of adrenalin by hypodermic injection in asthma. It was undoubtedly a most valuable remedy, but even in small doses it must be used with caution. With regard to Dr. Scanes-Spicer's remarks that all which he had said and done had been perfectly well known to him for twenty years, he could understand how difficult it must be for anyone to suggest anything which Dr. Scanes-Spicer did not already know. Members laughed when Dr. Haring spoke of relieving asthma by dilating the rectum or passing a bronchoscope. He considered such treatment just as likely to relieve asthma as nasal cautery, if one could produce the necessary effect upon the vasomotor system. He had tried in vain for years to make it understood that the effects of his nasal cauterization were not limited to the nose, that they were not to remove nasal irritations only, but that their action on the vasomotor system or the respiratory centre was the effect sought after.

CANCER OF THE THROAT.

By Robert H. Scanes-Spicer, B Sc., M.D.Lond.,
Consulting Surgeon, Diseases of the Throat, St. Mary's Hospital, W.

[*Abstract.*]

Dr. Scanes-Spicer read a paper entitled, *Cancers of the Throat: Further Observations of the Throat on the Sites of Predilection of Malignant Degeneration in the Oesophagus, Larynx, and Pharynx, in Relation to* (1) *Rigid Resistances (Actual or Potential Levers, Wedges, Pulleys, and Fulcra) belonging to the Bony, Cartilaginous Framework of the Endoskeleton;* (2) *Chronic Augmentation of Stress, Strains, and Friction Incident at those Sites from Habitual Faulty Postures and Working of the Living Body with Relative Displacements of its Constituent Parts.* In the course of it he expressed the opinion that cancer was no more an entity than was fever, and stated that, as the result of the examination of numerous specimens of laryngeal cancer and cancer of the nose, mouth, and oesophagus, he had come to the conclusion that cancer was more common in certain sites than in others. The sites in question were those in which soft structures overlay hard processes, angles, bosses, ridges, and other situations in which movement and friction took place during breathing, swallowing, and like actions.

He held the view that, if such forces were persistently and not too extensively increased in any part of the body, new growths might arise, and that such causes might play the same part in their causation as does the pipe, sharp teeth, etc., in other cases of cancer, not that irritation *per se* caused cancer, but that it acted in conjunction with other factors, as age, faulty nutrition, constitutional states. He mentioned the chief sites of growth, and urged that such were the parts most subject to pressure. He instanced, amongst numerous others, the parts just in front of the cartilaginous lips of the vocal processes, the lateral choroid area, and the anterior commissure, and he believed that if ossification of the thyroid cartilage of the arytenoids were present, or if the small joints in this neighbourhood were ankylosed the constant play of the hand upon the soft tissues might easily result in excessive irritation; in fact, clinical experience lent great support to this view. Every case of cancer he had seen during the last few years had been in a bad type of belly breather, which breathing posture caused such friction. (The whole question of unphysiological or belly breathing and of physiological or back breathing he had fully discussed upon a previous occasion.) He had never seen cancer in a habitual back breather; but as belly breathers were a numerous class, too much weight should not be attached to this factor.

He then referred to the question of throat cancer in animals, and quoted Professor Hobday as stating that it only occurred in the sites of impaction of foreign bodies. In the further elaboration of his argument he referred to the contrivances of Nature in obviating and minimizing strains, stresses, and friction, as by joints, muscular pads, and lubrication by secretion. He summed up his experiences and conclusions by stating that calcification of the cartilages of the larynx usually preceded malignant degeneration; that such calcification was a more efficient irritant when there was concomitant cachexia of portal system production, which latter was produced by bad orthograde posture and belly breathing; that such pathological change appeared first in the deeper structures adjacent to such surfaces exposed to friction, and that it was at a later date it appeared upon the surface of the mucosa. That laryngo-fissure was successful in the early stages because it removed not only the neoplasm but also the rigid resistance of the calcified cartilage. That men were more subject than women to cancer because more muscular and vigorous, and therefore the causes above referred to were more vigorous and persistent.

That women were more liable to extrinsic cancer because they more often practised superior costal breathing, which caused greater friction of the cricoid on the spine; because their lives were more sedentary; because of conditions of pregnancy, etc.

That in orthograde man epithelial cancer was thirty-six times more frequent than in pronograde animals.

That sarcoma is only four times more frequent in the former than in the latter, and that cancer and sarcoma were equally frequent in animals, whereas in man cancer was nine times more frequent than was sarcoma.

That cancer had never been found in invertebrates where one found a nervous system, where there was also a muscular, a digestive, a circulatory, a respiratory, and excretory and sensory, and a reproductive system; but when there was no endoskeleton, no portal system, and no lymphatic system.

For a further advance in knowledge accurate records should be kept of appearances of affected larynges; radiograms of the same, and of all museum specimens, to ascertain calcified conditions of cartilages; more knowledge as to physiological and premature ossification of cartilages; history of previous laryngeal trouble leading to adhesion and perichondritis, etc., and as to abnormal size of cartilages in relation to cancer; also observations as to posture and breathing of affected cases.

The nineteenth annual convention of the Association of Military Surgeons of the United States was opened at Richmond, Virginia, on November 1st. Among the delegates were representatives from the Governments of Great Britain, Canada, France, Germany, Mexico, China, and Guatemala. Surgeon General George H. Torney, of the United States army, was elected president for the ensuing year.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

A CASE OF HENOCH'S PURPURA, OR PURPURA ABDOMINALIS.

My reason for reporting this case is that so very few cases are reported, and that one does not find many references to it in textbooks. As far as I can gather, about 60 cases have been reported since Henoch first described the disease in 1874, and of these about 18 patients died. Osler says that he has reported 18 cases, and that the prognosis is, as a rule, good. Henoch's purpura is considered by some to be a variety of erythema exudativum muliforme; others place it among the angioneurotic oedemas; while, on the other hand, on account of the oedematous swelling which is usually present, it is suggested that there is a combination of purpura and angioneurotic oedema, as in the cases reported by Bowen in the *Journal of Cutaneous Diseases*, 1892, page 434, "The Association of Purpura and Acute Circumscribed Oedema."

Stelwagon, in his book on *Diseases of the Skin*, says of this disease:

> Apparently the dermatologist rarely gets sight of these peculiar cases, which, according to this writer, are more common than generally thought.

In May, 1909, I was urgently summoned to a girl aged 16, who had "violent cramp in her bowels and was vomiting." The story was that the girl was a domestic servant in another part of the county, and had caught a chill. She ached all over, and her knees and ankle-joints were swollen and tender. A doctor was called in, and he said she had rheumatism, and was to rest in bed for a few days. She improved slightly, and was sent to her own home in my district. I did not see her until the third day after her return home, when I was summoned on account of the abdominal paroxysms and vomiting. When I arrived the girl was rolling about in bed and screaming aloud. The spasm soon passed off, and she settled down quietly. She said that these spasms had been coming on gradually for the last two days, and in the girl's own words, "Each one is worse than the last." Also, she mentioned that spots were coming out on her legs.

On examination the abdomen was very tender, and the pain was referred to the umbilical region. I could not detect any swelling in the abdomen, nor was there any enlargement of the liver or spleen. Her legs were greatly swollen, but there was not as much "pitting" on pressure, as one would have expected. Her legs were covered with purpuric spots, which were more located on the shins, inner sides of the thighs, and on the buttocks. There were a few isolated spots on the back, particularly in the scapular regions, but none on the abdomen.

The knee and ankle joints were very tender, but there were no external signs of inflammation. The vomited matter was very green, but no blood was noted in it on this first examination. Tongue very furred, breath offensive, constipation for three or four days, temperature 100° F., pulse 80. I ordered her to be kept in bed, barley water by mouth, have hot bran bags applied over abdomen, and gave her an effervescing bismuth mixture, with liq. morph., 5 m doses. Two days later her paroxysms had not abated, diarrhoea had set in, and she had frequent attacks of copious epistaxis. Menstruation, which had been absent for about six months, had started again. At the end of a week her condition had not altered, and I, being suspicious of some acute abdominal mischief going on, suggested calling in a consulting surgeon. Her people could not afford this. Almost immediately after this suggestion the paroxysms abated, the vomiting stopped, but the diarrhoea and menstruation still continued. The abdomen was now easy to palpate, but nothing abnormal could be detected. She went on very satisfactorily until the end of the third week, when her symptoms all returned again, the paroxysms being so acute that the girl used to knock her head against the wall and throw herself about the bed. Fresh spots came out, keeping to the same areas as the former ones, which were now fading away, giving the skin a dirty yellowish, mottled appearance.

There was blood in the vomit, and the faeces were dark in colour. On account of the severity of the paroxysms I kept her under the influence of morphine (giving hypodermic injection of tab. morph. gr. ⅛ once and sometimes twice daily) for four days. These symptoms again passed off gradually, and at the end of the seventh week she was sitting up in bed. I had been giving her liq. ferri perchlor. ʒss, liq. strych. mv., aq. $CHCl_3$, ad ʒss. T.D.S. Also cod-liver oil and malt and plenty of nutritious food. A month after her last relapse I allowed her to walk into the garden—a matter of a few yards. About a fortnight thereafter (that is, two and a half months from my first seeing her) I was sent for again, and found that she had a recurrence of the attack—paroxysms, vomiting, purpura, etc. During this attack I gave her 10 m of oil of turpentine four-hourly for the first two days, but as it seemed to increase the vomiting I desisted, and put her on to tabloid calcii lactatis gr. v, two thrice daily. She gradually improved, and by the end of a week her symptoms had disappeared, excepting the purpuric eruption, which was fading.

I kept her in bed for a month, giving her the calcium lactate for three or four days alternately with the iron and strychnine mixture. Thereafter her improvement continued, and she has never had any return of symptoms.

The points of interest in this case are that at the onset there should be such definite symptoms of a rheumatic attack, or rather one should say, of an arthritic purpura.

Secondly, the severity of abdominal symptoms which almost brought the patient to the operating table for laparotomy.

Thirdly, the rapid recurrences of attacks.

Fourthly, one must add the fact that there were no recurrences after the administration of calcium lactate. In this respect it is interesting to note that Dr. Robert Hutchison, in his book on *Lectures on Diseases of Children*, says:

> Salts of calcium I have found no benefit from, although perhaps you ought always to try the lactate.

It was this "although perhaps you ought" that induced me to try it.

Coventry. A. Stewart Macmillan, M.B., Ch.B.

British Medical Association.

CLINICAL AND SCIENTIFIC PROCEEDINGS.

BIRMINGHAM BRANCH.

Pathological and Clinical Section.

Friday, October 28th.

Dr. Melson, President, in the Chair.

Cretinism.

Dr. W. A. Potts showed a cretin, male, aged 21 years, height 3 ft. 3 in., the youngest of a family of twelve, ten of whom were alive and normal, while one died of convulsions in infancy. Mother alive; father, who suffered from phthisis, died, at 48 years, of apoplexy. The family life and circumstances were not altered before the birth of the child; the boy was an imbecile, not entirely devoid of intelligence; could not talk, but made sounds which his mother understood; could go out by himself. Shown as an almost typical cretin, except that the tongue was not large and protuberant. Had a large, flat-topped skull, with coarse, scanty hair, ashy complexion, wrinkled forehead, flattened bridge of nose, everted thick lower lip, small fat pads above the clavicles, protuberant abdomen; broad, thick, stumpy hands with wrinkled skin; fingers square at tips; feet not so characteristic as the hands; no pubic hair, external genitals normal and in proportion to his size; no thyroid to be felt; extreme scoliosis. Just above and internal to the left scapula there was a large firm tumour, apparently due to displaced and hypertrophied muscular tissue overlaying a deformity of the ribs, secondary to the scoliosis. The case was discussed by Mr. Gamgee, Mr. Frank Barnes, and Dr. Parsons, and Dr. Potts, in reply, said the

mental state of the patient was really better than the physical condition suggested. He could remember and understand simple statements, and he could make requests by sounds which the mother was able to comprehend. He cited cases (of Dr. Shuttleworth's and Dr. Underhill's) which improved physically and mentally (though not to a normal standard) even when they were of mature age. Dr. Underhill's patient was a woman 50 years of age. Somewhat large doses (gr. 5 t.i.d.) were desirable, and if there was no improvement with the dried extract, fresh thyroids, or even thyroid grafting, should be tried.

Surgical Treatment of Graves's Disease.

Mr. LEEDHAM-GREEN showed a man in whom he had a year ago removed the right lobe of the thyroid gland, tied the right superior and inferior thyroid and the left superior thyroid arteries for Graves's disease. The patient was emaciated (he weighed 5 stone), and had diarrhoea, vomiting, delirium, rapid irregular pulse, high-pitched voice, and moderate enlargement of the thyroid gland and exophthalmos. Ten days after operation the pulse was reduced to half the former rate, and gradually the other symptoms abated, and he was able to return to work six months ago, and now works as a clerk from 9 a.m. to 5 p.m., and his weight is 8 stone. The case was discussed by the PRESIDENT, Mr. GAMGEE, Dr. POTTS, Dr. GLEGG, Mr. BILLINGTON, Dr. WILLOUGHBY GARDNER, Mr. JAMESON EVANS, and Dr. ELGOOD; and Mr. LEEDHAM-GREEN, in reply, said that operative treatment had improved the prognosis of Graves's disease. Relapses were less frequent after operative than medical treatment. He did not agree that there was a tendency to spontaneous recovery, as constant relapses were the rule. He was of opinion that operation should be performed at an earlier stage than was now the custom. He insisted on the economic advantages of operative treatment, as only in a few instances could the patient afford to be a chronic invalid. Kocher's mortality was 5 per cent., whilst he (Mr. Leedham-Green) had lost 2 out of 20 cases—1 from acute pneumonia and the other from acute phthisis one month after operation. He considered ligature of the arteries alone ineffectual, and favoured excision of one lobe. He considered that the prognosis was less favourable in men than in women.

Acute Pancreatitis.

Mr. GAMGEE read a note on a case of acute pancreatitis. The patient, a gentleman aged 45 years, was operated upon for that condition in January, 1910. During the twelve years before that time he had had many attacks of severe pain in the upper abdomen, and these had been put down (rightly as it proved) to the presence of gall stones. During the night of January 2nd, 1910, the patient had a sudden onset of severe epigastric pain accompanied by vomiting. He was seen by his doctor the next morning, when he was found to be in acute pain, and there were marked rigidity and tenderness in the epigastrium. The patient himself described the attack as being the worst he could remember. On January 4th he was better in every respect. During the daytime of January 5th the patient became much worse; the pulse-rate rose to 110, vomiting became frequent, and the abdomen became generally distended, painful, and tender. He was seen by Mr. Gamgee at midnight on January 5th; he then looked very ill and complained of general abdominal pain, and was frequently vomiting dark brown fluid. The bowels had not been open for three days, despite enemata; the abdomen was distended, and the wall was rigid and tender, the tenderness being most marked in the epigastrium, the right hypochondrium and the hypogastrium, and there was distinct fullness observable in the last position. It was stated that the pain in the hypogastrium was worse after micturition. A provisional diagnosis of acute phlegmonous cholecystitis was made, and an incision was made in the right hypochondrium. On the abdomen being opened patches of fat necrosis were seen in the omentum and scattered over the visceral and parietal subperitoneal tissue. In the position of the pancreas was a considerable soft swelling, and, on the hand being passed in that direction, a quantity of dark, blood-stained fluid escaped. The gall bladder was moderately distended, and gall stones could be felt in it. The gall bladder was opened, and several hundreds of stones, varying in size from a hazel nut to a millet seed, were removed. One stone was impacted in the cystic duct, but no stones could be felt in the common duct. The gall bladder was drained, and large tubes and gauze tampons were passed into the right kidney pouch and down towards the pancreas. A median incision below the umbilicus was then made. Through this more patches of fat necrosis were seen, and several ounces of thin purulent fluid were let out from the pelvis. After the operation the patient improved steadily, but it was many weeks before the biliary fistula closed. At no time was there any sugar in the urine. At the present time the patient was in good health, but since the operation had had one or two febrile attacks, accompanied by slight jaundice. Mr. FRANK BARNES related a case of acute pancreatitis in which he had operated within twenty-four hours of the onset of acute abdominal pain with rigidity, cyanosis, and rapid feeble pulse. Fat necrosis and turbid peritoneal fluid were observed when the abdomen was opened. The gall bladder was inflamed, and contained one large stone and numerous small ones, and puriform fluid. The gall bladder and the pelvis were drained, and the patient made a good recovery. Three other cases seen by him all died within a few days after operation. Mr. GAMGEE, in reply, said he considered drainage of the gall bladder a very important part of the treatment, as the infection of the pancreas generally arose from the biliary ducts.

Lymphadenoma.

Mr. FRANK BARNES showed a mass of glands removed from the neck of a boy aged 14. The mass was removed in one piece, and occupied the whole of the right side of the neck. Microscopic section showed them to be the hard or fibrous form of lymphadenoma consisting of masses of young fibrous tissue in general distribution throughout the gland, leaving very little lymph structure. The boy was pale and anaemic looking, with a red count of 4,500,000 and a leucocyte count of 8,000. There was a two years' history, the condition starting as a small gland in the middle of the neck, and gradually spreading. There were no other enlarged glands to be made out in the body. The spleen was not palpably enlarged.

Reports of Societies.

ROYAL SOCIETY OF MEDICINE.

PATHOLOGICAL SECTION.

Tuesday, November 15th, 1910.

Dr. LAZARUS-BARLOW, President, in the Chair.

Gastric Ulcer.

DR. C. BOLTON recorded an investigation into the effects of diet upon acute ulcer of the stomach produced by the local injection of gastrotoxic serum. A hyperacid secretion increased the effect of the toxin; if the epithelium was damaged the gastric juice would start the ulceration. Retention of food delayed healing. In cats the ulcer healed more rapidly under a milk diet than under one of meat. The greatest care was needed in the early stages, until the ulcer was reinvested with epithelium. Ulceration was more readily produced in a digesting stomach than in one at rest; this was the reason why healing was retarded by a meat diet. In ordinary cases, in the human subject, three weeks was a sufficient time for the healing, provided the food taken was not long retained in the stomach. Hyperacidity should be controlled by alkalis.

Atypical Chloroma.

Dr. FIRTH and Dr. LEDINGHAM recorded a case of atypical chloroma in a child whose blood presented the character of acute leukaemia. There were ulcers in the palate. Tumour-like swellings occupied the orbital region, the scalp, and meninges, and certain of the long bones; the cells were allied to large lymphocytes. The coloration was limited to the scalp. The relations of the disease to leukaemia were uncertain. No micro-organism was discovered.

Experimental Production of the Carrier State.

Dr. PETRIE and Dr. O'BRIEN recorded the results of experiments made by feeding guinea-pigs with a bacillus of the food-poisoning group. The carrier state was not

intermittent; an agglutination was produced in the blood by the presence of the micro-organism in the intestine.

Fatal Infection Associated with the B. Aertryck.

Drs. FIRTH, BAINBRIDGE, and LEDINGHAM recorded a case in which cultivation from the spleen of a child which died of enteritis showed *B. aertryck.*

Experiments with Air-dried Mouse Cancer.

Mr. S. G. SHATTOCK and Mr. L. S. DUDGEON described experiments (carried out at the Imperial Cancer Research Laboratories) which confirmed Jensen's statement that simple drying of cancer pulp in air at body temperature was lethal to the cells. This was one factor in preventing the transference of carcinoma from one person to a second by means of carcinomatous débris. There was very little evidence that carcinoma was ever an airborne disease. The authors had sprayed cancer cells suspended in salt solution into the mouths of mice, the process being repeated more than once, but so far with a negative result. Osler's statement that primary carcinoma of the lung was particularly common amongst the Scheeberg cobalt miners was worth bearing in mind; here the pneumonokoniosis doubtless prepared the way for the other disease. The remarkable vitality of the cancer cell in the undried condition, however, showed that the possible infectiousness and contagiousness of cancer could not be safely ignored. Extending their observations, the authors had found that the subcutaneous insertion of air-dried carcinoma produced no prophylactic immunization to the growth of a subsequent graft. This accorded with the results invariably observed at the Imperial Cancer Research, which showed that dead cancer tissue, whether killed by radium or other means, was powerless as a prophylactic. Neither did the insertion of air-dried carcinoma produce any curative immunization towards the growth of a graft previously made. The use of a centrifugalized extract (the material being ground first) was similarly inert. By the method of rapid centrifugalization the whole of the débris was got rid of from an extract in a very rapid manner, and as effectively as by means of the filter and press. If this extract was used prophylactically the growth of the subsequent grafts, instead of being retarded, was, in fact, accelerated. The same result had been obtained by Dr. Haaland from the use of pressed extract.

SECTION OF OBSTETRICS.

Thursday, November 3rd, 1910.

Dr. MACNAUGHTON-JONES, President, in the Chair.

Endometritis.

DR. ARCHIBALD DONALD and Dr. FLETCHER SHAW read a paper on the symptoms and treatment of chronic endometritis, with special reference to the results of curetting. The name was used to denote a class of cases of which the commoner symptoms were menorrhagia, metrorrhagia, leucorrhoea, dysmenorrhoea, and pain in the lower abdomen associated with a moderately enlarged uterus which is tender on palpation. Two groups of cases were included under the name; in one an inflammatory change seemed possible; in the other any inflammation of a septic or specific origin seemed out of the question. The clinical material consisted of 267 cases (hospital and private) of uncomplicated chronic endometritis. Notes had been taken before treatment in all of these cases, and the later condition of the patient was ascertained by written replies to printed questions. In all cases at least twelve months had elapsed since the operation. Notes were made as to the position of the uterus in 188 cases, and it was found that anteflexion was twice as common as retroflexion in virgins. The general result was that, of the 267 patients, 230 (or 86.1 per cent.) were relieved, and 37 (or 13.9 per cent.) were not relieved. The large majority did not obtain the full benefit until some months after the operation. Dr. AMAND ROUTH considered that the authors were really speaking of cases of chronic metritis. He did not believe that chronic endometritis ever occurred, apart from changes in the vessels and muscle of the uterine body; nor did he believe that such cases as these had true inflammation of the endometrium, but rather that there was overgrowth of the endometrium associated with previous pathogenic or saprophytic infection, or with subinvolution. In these cases, as the authors themselves admitted, the body of the uterus was enlarged and often retroverted and prolapsed. Curettage cured many of these cases, because it removed the overgrowth of adenoid tissue, and led to absorption of the congestive and inflammatory products in the muscular and vascular tissues of the uterus. Thus lightened in weight, the prolapse or retroversion was often spontaneously rectified during the subsequent rest in bed, though no doubt in suitable cases these results could be hastened by appropriate temporary help from pessaries. He considered ventrifixation very rarely required, and agreed with the authors that a congenital retroversion or retroflexion *per se* was often asymptomatic. It was not either necessary or desirable to curette all cases of dysmenorrhoea requiring treatment. There were many causes of dysmenorrhoea, both constitutional and local, and, if these causes were absent, an empirical dilatation would cure them quite as well as curettage.

SECTION OF ANAESTHETICS.

Friday, November 4th, 1910.

Mr. RICHARD GILL, Vice-President, in the Chair.

Prolonged Anaesthesia.

MR. A. L. FLEMMING described a method he had employed where prolonged anaesthesia was required. After inducing by ethyl chloride and ether, anaesthesia was maintained by ether, open or closed, for the first fifteen or twenty minutes, until, in fact, the operation was well under way. At this point nitrous oxide and oxygen, with frequent breaths of fresh air, was substituted, and continued for a short interval, varying in length from three to five minutes, and a change to ether then made, and so on throughout. Nitrous oxide anaesthesia being as it were superimposed upon ether intoxication, it was generally found that as the operation progressed it became possible to shorten the ether sessions, and to prolong those of nitrous oxide and oxygen. From his experience in 86 cases the author had come to the conclusion that it was sometimes to the patient's advantage that nitrous oxide had been thus employed so as to lessen the amount of ether toxaemia, and he was satisfied that a perfectly smooth anaesthesia could be maintained by the alternating system, although he felt that with improved apparatus it should be possible to obtain the same result with less changing and chopping. Among the patients who had proved favourable subjects were many for whom nitrous oxide and oxygen alone would not have been suitable, such as alcoholic men, very stout patients, bronchitics, and senile subjects. Mr. GILL, who had given ether alternately with gas and oxygen for short operations, was glad to hear that Mr. Flemming laid stress on the limitation of the dose, and also on maintaining the degree of anaesthesia as light as possible. Dr. SILK considered that a very rapid recovery from anaesthesia, as in the case of gas and oxygen, was not wholly an advantage, as the period of analgesia that accompanied recovery from an anaesthetic masked post-operative pain. Severe after-effects usually depended on a uniform level of anaesthesia not having been maintained. The method advocated by Mr. Flemming would require great skill, and the use of a very large quantity of nitrous oxide. Mr. BOYLE considered that a level anaesthesia would be very difficult to maintain with the alternative of the anaesthetics, and that after-sickness would probably be frequent. Mr. COLLUM had occasionally used ethyl chloride to deepen ether anaesthesia, as when, for instance, a student allowed a patient to come partially round. These cases had a good deal of after-sickness. Mr. HARVEY HILLIARD had kept records of after-sickness, and found it was less frequent when a regulating inhaler was used. Mrs. DICKINSON BERRY considered that light anaesthesia rather than a necessarily level anaesthesia was one secret of absence of after-effects. She found goitre cases were scarcely ever sick whether they had chloroform or ether. In these cases a very light anaesthesia was maintained, but it was not level throughout, as at a certain stage they were always allowed to come partially round and strain in order to make sure that the vessels were satisfactorily secured. Mr. FLEMMING, in reply, said that he was surprised himself when he tried the method he advocated, both by the ease with which a level anaesthesia was maintained and at the satisfactory after-results.

UNITED SERVICES MEDICAL SOCIETY.

Wednesday, November 9th, 1910.

Colonel Sir David Bruce, F.R.S., in the Chair.

Malingering.

Major C. E. Pollock, in a paper on malingering, said that as many as 80 per cent. of those invalided for insanity from India recovered on the voyage home. There should be established in India a central institution for the careful observation of cases of mental disability. Men should not be allowed to evade their obligations by shamming madness; but at the same time it was very necessary to be extremely cautious about coming to the conclusion that a mental case was one of malingering. If a patient discharged as a malingerer went and did something really foolish, such as discharging a rifle in a barrack room, the medical officer was put in an awkward position, for it would be very difficult to decide whether the foolish act was that of a madman or only the supreme effort of a malingerer to obtain his end. Speaking of the numerous methods of mutilation attempted in countries where conscription was in vogue, he said that the retired Russian *feldsher* was a past-master in the arts necessary to a "conscript's friend," for he included in his practice the production of artificial hernia, spurious tumours by the system of paraffin, hammer toe by fixing the toes in a plaster bandage for some months, and numerous other devices of that kind to deceive the examining medical officer and to secure exemption from military duty. Brigade-Surgeon Beattie said that when he was serving he saw no malingering; when malingering did occur to any extent it was evidence that the men were not being properly managed. Surgeon-General Gubbins said the proposal to establish one place for observation of mental cases in India was not practical on account of the distances to be travelled—there should be four or five. Major W. S. Harrison said that spurious palpitation had been produced by chewing cordite, which caused similar symptoms to those caused by the injection of nitrites. In one case an R.A.M.C. recruit complained of attacks of pain radiating from the loin to the testicle followed by blood in the urine. On admission no blood could be found, but the day following what appeared to be pus was noted. It turned out to consist of starch granules, and was evidently dusting powder added to the urine.

Guinea-worm.

Major S. L. Cummins, R.A.M.C., in a paper on guinea-worm, gave instances in which the worm had caused great loss of efficiency to garrisons of native troops serving n endemic areas, and pointed out that, if it were ever necessary for British troops to serve in tropical Africa, the conditions of water supply in many places would make this disease a serious menace to health. The strategical importance of the disease, however, was diminished by the fact that it took nearly a year to develop, so that it could not complicate military operations lasting less than twelve months. Prophylaxis, though simple in theory, and consisting in clarifying infected water before use on the one hand, and protecting water from infection by cases on the other, was shown to be difficult in practice owing to the conditions prevailing in endemic areas. Lieutenant-Colonel Sir W. B. Leishman inquired as to the habits of Egyptian soldiers in the matter of wading in water. He was very sceptical about the intelligence of filariae leading them to go to parts where transmission to other hosts was facilitated. Major Cummins replied that at home in Egypt the men lived a great deal in the water, but in the Sudan they wore boots and were not so constantly in the water; but the Sudanese, who were the main source of infection, were constantly paddling in water up to their knees.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY.

Friday, November 11th, 1910.

Dr. A. Christy Wilson, President, in the Chair.

Mr. J. Stewart, in a paper on *Some cerebral surgery cases* on which he had operated, described a case in which there was dislocation of the parietal bone with fracture of the anterior fossa at the base of the skull. The symptoms closely simulated a quite different surgical lesion of the brain. Trephining was performed, with reduction of the dislocation; recovery ensued. In another case of slight and obscure injury to the brain, late hemiplegia supervened; recovery followed decompressing trephining. In a third case a chronic abscess of the temporo-sphenoidal lobe presented symptoms suggestive of tumour. In a fourth case there was an hour-glass subdural and temporo-sphenoidal abscess. The following were among the exhibits: Dr. C. Oldfield: A specimen of *Tuberculous pyosalpinx* (one-sided) found attached to the omentum in an umbilical hernia. The patient, who was lactating, had had regular and profuse menstruation since her confinement, nine months previously; the uterus was bulky, 4½ in., but not otherwise abnormal. Dr. E. F. Trevelyan: A girl, aged 3 years, with partial *Paralysis of the right shoulder muscles*, including the serratus magnus, of some four months' duration. A similar paralysis—but not so marked—had recently developed on the other side. Between the onsets of the paralysis in the two arms a slight but definite prominence had been noticed in the lower cervical and upper dorsal regions of the spine. Mr. A. L. Whitehead: (1) A boy, aged 15, with *Bilateral interstitial opacity* of both corneae, without iritis, of two months' duration. For six weeks the knee-joints had been swollen without causing pain or interfering with locomotion. No other evidence of congenital syphilis was present. (2) A girl, aged 10, with *Right interstitial opacity* of the cornea, without iritis, of three weeks' duration. On examination both knee-joints were found to contain fluid. The duration of this was uncertain, since it had caused no discomfort and was unknown to the patient. With the exception of a slight scar at one angle of the mouth there was no other sign of congenital syphilis.

NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY.

Wednesday, November 2nd, 1910.

W. Morley Willis, F.R.C.S., President, in the Chair.

Abdominal Rigidity.

Mr. W. Morley Willis, in a presidential address on the significance of the rigid abdomen, stated that the condition was always an early phenomenon in inflammatory lesions within the peritoneal cavity, and occasionally remained the sole objective symptom until the condition had so far advanced that operative interference was likely to prove unsuccessful. Abdominal rigidity, therefore, in itself justified an exploratory operation. As an instance in point he quoted a case in which a boy, aged 16, had been seized with acute abdominal pain four hours previous to his being seen by Mr. Willis, but the only objective symptom was abdominal rigidity. Nevertheless, section was at once performed, and a perforation of the duodenum discovered. In another case in which operation was performed on the strength of abdominal rigidity, the cause proved to be a perforated gastric ulcer. Abdominal rigidity might occasionally occur in some pleural conditions, but in these cases temperature was unusually high, and respiration rapid and generally catchy. As a surgical axiom it might be laid down that the necessity for operation was urgent in exact proportion to the intensity of the abdominal rigidity. In the discussion which followed, cases were quoted in which abdominal rigidity had been absent, although the conditions were urgent, and others in which abdominal rigidity had been present, but recovery had occurred without surgical interference.

ULSTER MEDICAL SOCIETY.

Thursday, November 10th, 1910.

Dr. J. J. Austin in the Chair.

The new President of the society, Sir Peter O'Connell, inaugurated his term of office by introducing a discussion on *Poor Law reform* in Ireland. The dispensary doctors, he said, had been agitating for betterment of their position ever since the Medical Charities Act. They now claimed promotion by merit, a definite rate of increase of salary, and a retiring allowance. Their salaries, especially that part paid them as medical officers of health, were simply a retaining fee, and utterly inadequate as a recompense for their duty. Dr. Gardner Robb, who had organized an

agitation in Ulster, stated that 95 per cent. of Ulster medical men had signed the petition, and in Connaught the percentage, he understood, was equally high. The profession, therefore, was practically unanimous. Dr. DARLING (Lurgan) said that the present state of affairs was fair neither to the people nor to the doctor. Appointments were obtained under the most humiliating conditions. Sir JOHN BYERS said three things were required: (1) Fair play to those in the profession; (2) raising the whole tone of the profession; (3) raising the whole health of the country. The service in Ireland had drifted apart from that in England. The sick consumptive was allowed to remain at home in Ireland, when a home allowance was made. In the West of Ireland there was little private practice; in future the profession there must be subsidized. If a new service was inaugurated, it must be distinctly and clearly understood that a broad consultative and controlling body must be elected from all parts of Ireland to take charge of the enterprise. It must not be left in the hands of any one town or of any one of the present departments.

CLINICAL SOCIETY OF MANCHESTER.

Tuesday, November 15th, 1910.

Mr. J. HOWSON RAY, President, in the Chair.

DR. P. R. COOPER, in introducing a discussion on *Bronchitis as it affects adults*, said that probably in nearly every case bronchitis was due to micro-organisms, while impure overheated air, fogs, and noxious fumes probably acted by lowering the local or general resistance, and favouring the growth of these organisms. In chronic bronchitis, especially if attended by bronchiectasis, the chest was a breeding ground of micro-organisms, and on the slightest provocation conflagrations—that is, acute bronchitis or peribronchitis, etc.—resulted. In diagnosis it was of importance to ascertain the causal organism as well as its location in the bronchi, and here the services of the bacteriologist were required. In treatment it was probable that in the future, especially in chronic cases, vaccine-therapy would prove of great assistance. The experiences of Drs. Latham and Des Voeux, as related at the discussion on vaccine-therapy at the Royal Society of Medicine, were quoted in support of this view. Dr. CHRISTOPHER HEYWOOD, who dealt with the disease as it affects children, laid special stress on want of fresh air as a predisposing cause, and on sudden changes of temperature—for example, from a stuffy nursery to a cold bedroom. He also urged that there should be no delay in removing adenoids, if present, even during the bronchitic attack if necessary, and stated that he had seen striking relief afforded by this procedure. Discussing treatment by drugs he urged the avoidance, as far as possible, of the usual expectorant mixtures, and the substitution of emulsion of ol. morrhuae according to age and circumstances. In the discussion which followed, the PRESIDENT referred to a case of Dr. Heywood's in which he had removed adenoids during the bronchitic attack, with most excellent results.

MANCHESTER PATHOLOGICAL SOCIETY.

Wednesday, November 9th, 1910.

Mr. ALEXANDER WILSON, President, in the Chair.

DR. W. MAIR, in a paper on *Enlarged thymus and sudden death*, described 7 cases of lymphatism in which he had made *post-mortem* examinations. Only two of these deaths were unexplained. In one of these he was able to demonstrate definite degenerative changes (waxy degeneration of Zenker) in the heart muscle. He was of opinion that death in these cases was due to the action on the heart of some as yet unknown toxin, and that neither the mechanical theory nor the theory of a thymogenic autointoxication could be accepted as a satisfactory explanation. Dr. A. SELLERS described a case of *Acute fatal poisoning by aniline*, and mentioned some experiments showing that atmospheric air impregnated with small quantities of aniline vapour was capable of causing toxic symptoms in small animals.

Rebiews.

PROBLEMS OF THE EAR.

IN an age in which every would-be specialist feels it incumbent upon himself to quote from "My Book," what would be the task of the reviewer without hope? His task is to review the same old apologetic preface, the stereotyped table of contents, the familiar illustrations gathered from many sources, the well-known and well-tried formulae, the same old clinical inexactitudes of the author's wide and varied experience. The hope is that the masters will not remain silent for ever. Patience has been rewarded, hope has been realized, by the appearance of an English translation of the fifth edition of Professor Dr. ADAM POLITZER'S *Textbook of the Diseases of the Ear*.[1] No one can accuse the students of not having studied even if they have not imitated. Professor Politzer's book bears the same relation to works on otology as Burton's *Anatomy of Melancholy* formerly did to general literature—a source from which many have drawn but which few have acknowledged. We are again indebted to Dr. MILTON J. BALLIN and Dr. CLARENCE L. HELLER for a translation into excellent English of a work which is sure to meet with as favourable reception as its predecessor. The fifth edition, from which the translation has been made, has been completely rewritten, and every chapter has been revised. This has necessitated the elimination of some material of less importance in order to make room for matter of more recent date which Professor Politzer has deemed indispensable to the student and practitioner. The more perfected technique in operative procedures in labyrinthine suppurations, in intracranial complications, and in affections of the jugular bulb, has received special attention. The book, as the translators quite correctly state, abounds with literature throughout the text, and is replete with references, gathered from the most reliable and most recent authorities. In a sentence, the work is undoubtedly of the highest standing both as a textbook and as a work of reference. The only fault, if it is a fault, we have to find is that it is too full for the purposes of the general practitioner. This raises the question, What would be the best way to go to work to write a textbook to meet the requirements and the pressure of work of a general practitioner? One way obviously suggests itself—to supply him, if possible, with a "Pocket Politzer." It is, however, sincerely to be hoped that the appearance of this new edition will not be followed by a large influx of "Potted Politzer"! In that event the reviewer, like Pauline, in order to endure will require a fire in the studio.

Mr. MACLEOD YEARSLEY'S *Textbook of Diseases of the Ear*[2] was announced as "a more complete textbook upon diseases of the ear than has yet been published in England, the larger ones at present in that language being either translations from the German or imported from the United States." Whilst that statement might be criticized, we will not pay the author the poor compliment of doing so in the small amount of space at our disposal. We need only say that the announcement reminds one of the Englishman's reply to the American who, in describing the great fire of Chicago, referred to it as one vastly superior to the Great Fire of London. The reply was, "that the citizens of London at that time were more than satisfied with the size of their fire." Although otology is comparatively a modern branch of medical science, there has been no dearth of textbooks or varieties of sizes for the student to select from. The announcement further claimed for the book that "it is as complete as is compatible with conciseness." The author has undoubtedly succeeded in this respect; even the *Mus musculus* has not been forgotten. The average reader of a textbook takes

[1] *A Textbook of the Diseases of the Ear.* By Professor Dr. A. Politzer. Translated and edited by M. J. Ballin, Ph.B., M.D., and C. L. Heller, M.D. Fifth edition. London: Baillière, Tindall and Cox. 1909. (Roy. 8vo, pp. 906. 25s.)

[2] *A Textbook of Diseases of the Ear.* By M. Yearsley, F.R.C.S. London: Kegan Paul, Trench, Trübner, and Co., Ltd. 1908. (Demy 8vo, pp. 464. 18s.)

up the volume with a view of adding to his means of earning a livelihood, and at first he might wonder how a knowledge of "the curious movements of the Japanese dancing-mouse" could be of service to him in this respect. That there is money in mice is illustrated by the following incident. Some years ago, when our present Sovereign visited Dartmoor convict prison, an inmate who had trained a mouse as a companion was asked to call up the mouse to perform before His Royal Highness. Lapse of time had not allowed the inmate to keep abreast with changes, and he failed to recognize his visitor as the Prince of Wales. He therefore declined to call up the mouse. The next day it caused him the greatest sorrow to learn of the mistake he had made, but not long afterwards that mouse could be seen nightly performing in the Mile End Road as the mouse that had given a command performance before royalty in Dartmoor convict prison.

Two years ago the medical staff of the Central London Throat and Ear Hospital[3] issued a circular announcing that they were preparing a compilation of case reports which they felt sure would prove of great interest and value both to the special and general practitioner of medicine. They further announced their intention of publishing the reports annually. The first volume appeared, but so far as we know the publication has not been continued. This is undoubtedly a matter for regret, provided the reports had dealt more fully with hospital statistics, instead of being given up almost entirely to articles written by members of the staff. In the first volume the articles occupy 118 pages out of 134. The remaining 16 pages constitute an appendix giving the medical statistics of the work of the hospital in 1907. By way of illustrating the fluctuation in the frequency of any given disease, it is interesting to note in the report before us that the number of cases of varicose veins of the lingual tonsil seen in the out-patient department of the Central Ear, Nose and Throat Hospital during the year 1907 was only 19. Only some ten years ago, the late Mr. Lennox Browne drew attention to a far greater prevalence of this distressing condition. The compilers of these reports in their preface state that at the foundation of the Central London Throat and Ear Hospital the objects of the institution as defined in its rules were first the treatment of "diseases of the throat and ear and adjacent parts"; and secondly, the provision to "medical practitioners and students of medicine" of "ample opportunity for studying such diseases scientifically." It would have been as well if the editors of the reports had allowed some of the articles to stand down to make room for others dealing with subjects about which aurists are less divided in their opinions. The advisability of the retention of the matrix in operations for cholesteatoma of the middle ear is at the present moment a most debatable subject. There is still doubt and difficulty about the pathogenesis of cholesteatoma of the ear, and until this has been defined it would have been as well to have withheld a definite expression of opinion about the surgical treatment.

When in doubt and difficulty one gladly turns to a volume entitled *Modern Otology*,[4] but with some disappointment in the matter of cholesteatoma. So far as the index to the work by Dr. BARNHILL and Dr. WALES affords assistance in searching for a solution of a difficult problem, we are referred to page 367, which contains no mention of the term, and on page 368 we find little more than a bare mention. We make this remark with no disparagement of the volume, but to emphasize our difficulty and the lack of help. The volume compensates for this omission with an excellent chapter summarizing the bacteriology of the ear in which opinions have been freely quoted from the work of Dr. Hasslauer of Nürnberg. The authors, in the preparation of this work, have had amongst others the following objects in view, that of correcting certain traditional beliefs. They very rightly say that several factors have greatly limited the progress of otology in the past. Chief amongst these are the strangely persistent beliefs that children will outgrow their ear troubles, and that a discharging ear is nothing more than an annoyance, or is even beneficial to the individual. Further, the authors advocate, and again very rightly, the earliest possible prophylaxis or treatment. Too little attention has been paid to the prevention of aural affections. Throughout the work, therefore, on all proper occasions, the fact is stated that prevention of aural discases is usually easy in early childhood, whereas benefit or cure as the result of treatment in later life is often impossible. The recognition of this, as the readers of the JOURNAL are fully aware, has largely occupied the closest attention of those responsible for the development, physically and mentally, of the children of the poor in this country during recent times.

"There are sermons in bones and good in everything" might well be the motto of any monograph recording the results of a research, necessarily patient and laborious, into the topographical and surgical anatomy of the pars mastoideä.[5] Dr. H. E. HAKASE KANASUGI'S monograph is undoubtedly worthy of this motto. It would be difficult to name another region in the body occupying so small an area and lending itself so readily to surgical accidents, frequently unavoidable in operations imperative for the saving of life. The stock coloured plates, which must now be familiar to readers of textbooks on aural surgery, bring out vividly the important structures that have to be reckoned with—the great blood vessels which, when met with unexpectedly, may suddenly bring the operation to a standstill; the facial nerve at times may have to be disregarded, but nevertheless its injury may be a permanent record; damage to the semicircular canal may lead to worse trouble than that for which the operation was originally undertaken, and the long-suffering dura mater may obtrude itself upon the operator. To steer safely between Scylla and Charybdis, an intimate knowledge of what is regarded as the normal structure of the temporal bone and also of its many anomalies is essential. In fact a knowledge of the anomalies, and of the circumstances in which they may be expected, is quite as important as familiarity with the normal structure; one might say more so, for experience raises the questions whether the anomalies do not rival the commonly accepted relationships of the parts that make up this treacherous bone. Dr. Kanasugi, in a highly technical monograph, has concisely presented the results of his investigations into the topographical and surgical anatomy of the mastoid region as based upon the examination of 4,000 skulls. These results are summarized within twenty-five pages of letterpress. The remainder of the volume consists of forty excellent plates of typical specimens. The illustrations are of natural size, and many of them in consequence have to occupy a double page. The author, whilst mentioning that the temporal bone consists of three parts, confines himself to the pars mastoidea, which includes in his classification the pars petrosa. Following upon Török he adopts the classification of katamastoideal and anamastoideal skulls. Of the 4,000 skulls which were examined 3,060 were placed under the former group, and 940 under the latter; from this it would seem that there is no middle course. Plates II and III are excellent photographs of what presumably may be regarded as extreme examples of these two types. The concluding section of the text brings out the practical bearing of the research upon aural surgery. The preface of the work is dated from "Tokio-Budapest-Wien," but so far as we can ascertain there is no mention of any differentiation between European and Asiatic skulls which contributed to the 4,000 specimens upon which the monograph is based. Dr. Kanasugi has done a piece of work which places his *confrères* in all countries under an obligation. He has set an example which might well be followed in this country, if only those who are waiting for practice were to be dissuaded from the present day craving to

[3] *Central London Throat and Ear Hospital Medical Reports.* Volume I. London: Adlard and Son. 1908. (Medium 8vo, pp. 134. 5s.)

[4] *Principles and Practice of Modern Otology.* By J. F. Barnhill, M.D., and E. de W. Wales, B.S., M.D. Philadelphia and London: W. B. Saunders Company. 1907. (Fcap. 8vo, pp. 258. 6s.)

[5] *Beiträge zur topographisch-chirurgischen Anatomie der Pars Mastoidea.* Von Dr. H. E. Hakase Kanasugi. Wien und Leipzig: A. Hölder. 1909. (Sup. roy. 8vo, pp. 25; Taf. 40; Mk. 8.60.)

satisfy vulgar ambition to learn a subject by writing a textbook.

Upon turning to the work by Professor HEINE, entitled *Operations on the Ear*[6]—for a most excellent translation of which we are indebted to Mr. LOMBARD MURPHY—we find a very good summary of our present knowledge of the pathology, diagnosis, and treatment of cholesteatoma of the ear. For this alone the book is deserving of careful perusal, but as a small, handy volume dealing with operations for suppurative disease of the ear, and also with intracranial complications of that disease, it may certainly be commended to all engaged in that department of practice.

The Surgery of the Ear[7] has received attention at the hands of many authors. Dr. SAMUEL J. KOPETZKY has dealt with the subject in a volume which appears to embody all the additions to our knowledge in this advancing department of surgery. The book is well illustrated, and contains ample references to the literature, which will be of service to those desirous of pursuing the matter dealt with beyond the compass of the present volume. In the index to this work no mention is made of cholesteatoma.

The importance of a practical knowledge of diseases of the ear and their treatment is daily becoming more and more recognized by the general public, so that they will no longer be put off with the old adage that such diseases may be divided into two classes—those that can be cured by syringing, and those that are not so cured are incurable. During the past three years many useful works have been published, and amongst those which undoubtedly may be commended to all desirous of not being regarded as ignorant of a most important department of practice are *Diseases of the Ear*,[8] by Dr. THOMAS BARR and Dr. STODDART BARR; a textbook of diseases of the ear,[9] by Dr. GEORG BOENNINGHAUS, and a *Textbook of Otology*,[10] by Professor BEZOLD and Professor SIEBENMANN. The latter has been translated by Dr. Holinger. As the translator mentions in his preface, the necessity of this has become apparent amongst otologists whenever the discussion in otological circles has led to the subject of the diagnosis of invisible diseases of the ear. The work comprises thirty-two lectures, and amongst them those which will be valued most by the general practitioner are the chapters dealing with the pathology of the labyrinth, deaf-mutism, and the education of deaf-mutes.

The work of Dr. Boenninghaus supplies a volume intermediate between the elementary textbooks and the largest treatises.

Dr. Barr's manual of the diseases of the ear has been before the profession for so many years that it is not necessary to dwell upon its general merits and utility. In this, the fourth edition, Dr. Thomas Barr has had the co-operation of his son, Dr. Stoddart Barr. An additional chapter is devoted to the operative treatment of the ear. The two chapters on the nose and throat have been rewritten by Dr. Stoddart Barr, and the two dealing with the intracranial and vascular complications of purulent inflammation of the middle ear have been considerably enlarged. A new feature of the present edition is the introduction of coloured plates, which will be found of considerable assistance to those commencing a study of the tympanic membrane. The anatomical and physiological descriptions are printed in smaller type, and appear in connexion with each of the divisions of diseases of the ear by way of introduction to the description of their diseases. This plan is but one of the many practical points in the work which will ensure for it a continuance of the popularity which it has always well merited.

[6] *Operations on the Ear: The Operations for Suppurative Otitis Media and its Intracranial Complications.* By B. Heine. Translated and edited from the second German edition by W. L. Murphy, M.A., M.B., B.C.Cantab., F.R.C.S.I. London: Baillière, Tindall, and Cox. 1908. (Demy 8vo, pp. 220; ill. 56. 8s. 6d.)

[7] *The Surgery of the Ear.* By S. J. Kopetzky. London: Rebman, Ltd. 1909. (Roy 8vo, pp. 386; ill. 63. 16s. 6d.)

[8] *Manual of Diseases of the Ear, including those of the Nose and Throat in Relation to the Ear.* Fourth edition. By T. Barr, M.D., and J. S. Barr, M.B., Ch.B. Glasgow: J. Maclehose and Sons. 1909. (Med. 8vo, pp. 505; 3 plates. 14s.)

[9] *Lehrbuch der Ohrenheilkunde für Studierende u. Aerzte.* Von Dr. G. Boenninghaus. Berlin: S. Karger. London: Williams and Norgate. 1908. (Sup. roy. 8vo, pp. 385, Taf. 1. M. 9.80.)

[10] *Textbook of Otology for Physicians and Students.* By Fr. Bezold, M.D., and Fr. Siebenmann, M.D. In thirty-two lectures. Translated by J. Holinger, M.D. Chicago: E. H. Colegrove Co. 1908. (Roy. 8vo, pp. 330. 3.50 dols.)

THE DIGESTIVE GLANDS.

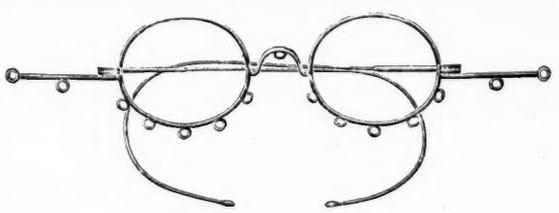
IN our review of the first edition of Professor THOMPSON'S translation of Pavlov's important book, *The Work of the Digestive Glands*,[11] we spoke of it as a readable account of researches not unworthy to be compared with the classical researches of Claude Bernard. The same remark applies with even greater force to the present edition, for the subject matter has been brought up to date. The new material has been in part supplied by the original author and his colleagues at St. Petersburg, and in part by the translator; the two new chapters on the muscular movements of the alimentary canal are from Professor Thompson's pen, and they add very materially to the value of the book. This is a branch of research very closely associated with English, or at any rate English-speaking, physiologists; the names of Beaumont, Cannon, Bayliss and Starling, and Hertz, will at once occur as instances. Although the book treats of but one branch of physiological inquiry, it is one which we can heartily recommend not only to those engaged in research, but to every student of physiology and medicine. The conclusions are so important, the facts so full of interest, the arguments so convincing, and the style so lucid, that the book serves as a model of what a scientific manual should be. It is, moreover, a monument to the importance of the experimental method. Both physiology and medicine are enriched by its appearance.

[11] *The Work of the Digestive Glands.* By Professor I. P. Pavlov, St. Petersburg. Translated by Professor W. H. Thompson, Dublin. Second English Editiou. London: Charles Griffin and Co., Limited. 1910. (Illustrated, medium 8vo, pp. 279. 10s. 6d.)

MEDICAL AND SURGICAL APPLIANCES.

A Protective Mask for the Face for Use during Examination of the Nose and Throat.

MR. B. SEYMOUR JONES, F.R.C.S., Honorary Assistant Surgeon, Birmingham Ear and Throat Hospital, writes: It has occurred to me that a light mask to protect the eyes and face would give an assurance against infection in the oral and laryngeal examinations of patients suspected of tubercle, syphilis, diphtheria, acute infections of tonsils, nose, etc., and also enable the operator to make topical applications, remove polypi, and such-like operations, without having to dodge sudden and involuntary expectorations of the patients. I have devised the mask figured in the illustration for this purpose. It consists of a spectacle frame with lateral projections; from this is suspended a curtain of mosetig battist covering the face. Fixed to the lower rim of the spectacles and lateral projections are small rings. To attach the mask to the spectacle frame, a piece of mosetig battist a little wider than the frame, and about 10 in. long, is laid across the spectacles, small paper fasteners (Criterion micro-fasteners) are pushed through this into the eyelet rings behind and then pressed open. A little slack should be left over the nose. Snip out the material in front of the glasses. Battist is selected because it is light, durable, and readily cleansed. The makers of the spectacle frame are R. Bailey, optician, 14, Bennett's Hill, Birmingham. Plain glasses or lenses to suit the sight are fitted to the frame to order.



MEDICINAL AND DIETETIC PREPARATIONS.

Regulin.

In spite of the large number of preparations in use for the treatment of chronic constipation, no one will deny the possibility that yet other means of dealing with it may possess advantages over any hitherto in vogue. The preparation known as "Regulin," supplied by the Regulin Syndicate, Limited (13, Cullum Street, London, E.C.), consists of agar-agar in the form of small flakes, containing a small proportion of an aqueous non-bitter extract of cascara sagrada. Agar-agar has been recommended for use as a laxative, its action being mechanical; after being swallowed, it absorbs large quantities of water in the stomach and retains it as it passes on into the intestine, and so causes the formation of soft faeces instead of the hard masses so usual in constipation; it is claimed that in the preparation under notice the extract of cascara slowly separates from the agar-agar in the lower intestine and stimulates evacuation by its purely local action on the mucous membrane. Our examination of the specimens of Regulin submitted show that it is a tasteless material which could be taken without difficulty or repugnance, and although the dose is somewhat large this disadvantage may be overcome by mixing it with food; it is also supplied in tablets made up with chocolate, which are quite attractive to taste.

FINANCIAL RELATIONS OF HOSPITALS AND MEDICAL SCHOOLS.

The Honorary Secretaries of the King Edward's Hospital Fund for London have sent us the following correspondence for publication:

To His Gracious Majesty King George V.

May it please your Majesty,

The Metropolitan Radical Federation, for whom I am empowered to write, have observed with deep concern that some of those who manage the great hospitals of London are persons who have not attended with becoming respect to the recommendations clearly and emphatically pronounced by Sir Edward Fry, His Grace the Archbishop of York, and Lord Welby, in the report made by them in 1905 to the Council of King Edward's Hospital Fund after they had fully investigated the financial relations existing between the great hospitals and the schools contiguous to them.

Those three investigators, whose probity and wisdom none can gainsay, declared that the benefits reciprocally conferred by the hospitals and schools the one upon the other should be regarded as equivalent, and that, therefore, where money was taken from the coffers of the hospital and conveyed to those of the school, the school remained a debtor to the hospital to the amount of such diversion.

To this declaration the Metropolitan Radical Federation appended its cordial adhesion when it was published. The schools are private enterprises which do not reveal their accounts to the public, and their profits, if any, are retained by private persons, and do not find their way into the treasury of the hospital.

This salutary direction that money subscribed or bequeathed to the hospitals, by persons whose sole interest is centred in the tending of the sick poor, should not be conveyed away to schools where the public are not informed what becomes of it, has been openly flouted in one hospital and silently evaded in some others.

It has been openly flouted at St. George's, where Dr. Charles Slater in a speech to the school contemptuously spoke of the "ill-advised action of a commission of the King's Hospital Fund."[1] And this insubordinate utterance is fully endorsed in the last published accounts of St. George's Hospital, where we discover[2] that £1,026 was paid directly from the funds of the hospital in salaries to the laboratory staff of the school, and £550[3] similarly diverted to the "medical school for work done for the hospital," although the report of Sir Edward Fry and his distinguished coadjutors pronounced any "work done for a hospital" by a school as being paid for fully by the reciprocal benefit conferred upon the school by admission of its pupils to the wards of the hospital, and any cash payments, such as these of £550 and £1,026, to be debts of the school to the hospital.

In these very clear circumstances the Metropolitan Radical Federation are disturbed, astonished, and grieved to observe that the Distribution Committee of King Edward's Hospital Fund have condoned this open flouting of the directions of their own distinguished committee of inquiry by making a grant to St. George's Hospital of £1,500, which appears in the same published accounts as the above insubordinate diversions.

In many other London hospitals vast sums in the past have been taken from the funds of the hospitals and conveyed into the private accounts of the schools; these amounts remain debts owing by the schools to the hospitals, but no effort appears as yet to have been made to repay them.

The Metropolitan Radical Federation make no apology for coming into the presence of Your Majesty, who is President of King Edward's Hospital Fund, with the respectful request that Your Majesty will at least direct that no further grant from King Edward's Hospital Fund be made to St. George's Hospital until the £1,576 diverted to the school, according to the last accounts, are refunded.

The Metropolitan Radical Federation further respectfully suggest that it would certainly give the working classes of London greater confidence in King Edward's Hospital Fund, and in its influence for strict finance at the hospitals, if its Council were elected, like the councils of other great philanthropic bodies, by the subscribers at an annual meeting, and not, as at present, without any reference to the subscribers.

The Metropolitan Radical Federation, for whom I am empowered to write this letter, represents over 40,000 working men of London; they therefore claim to speak more representatively for those for whom the hospitals were founded, exist, and are supported, than the Council of King Edward's Hospital Fund, who represent no one but themselves, and they confidently hope that Your Majesty will not refer this letter to that Council, but will take it into your own gracious consideration, and direct that what we humbly ask for shall be done.

I am, Your Gracious Majesty,
Your obedient and humble servant,
(Signed) Edw. Garrity,
Honorary Secretary.

37, Hall Street, City Road, London, E.C.

King Edward's Hospital Fund for London,
7, Walbrook, E.C.,
18th November, 1910.

Councillor E. Garrity, M.I.I.,
Honorary Secretary,
Metropolitan Radical Federation.

Dear Sir,

The communication addressed by you to His Majesty the King on the subject of the relations between hospitals and medical schools has been forwarded to the Fund by direction of the King, as His Majesty is now Patron and no longer President of the Fund, and it has been considered by the Executive Committee.

The Committee feel sure that a knowledge of the facts will convince you that there is no ground whatever for the allegations against the Fund contained in your memorandum.

Your communication suggests that two departures from the findings of Sir Edward Fry's Commission of Inquiry have been committed by hospitals and condoned by this Fund. In the case of St. George's Hospital it is alleged that, contrary to the recommendations of the Commission, moneys were diverted in the year 1909 from the hospital to the school, and that the Fund by making a grant in that year condoned such diversions. It is also stated that in many other London hospitals vast sums have been conveyed in the past into the private accounts of the schools, and that no effort appears as yet to have been made to repay them.

In view of the reflections contained in your communication upon the alleged action of the King's Fund, we are directed to say, in the first place, that there is no ground for the suggestion that by making a grant to St. George's Hospital in 1909 the Fund has condoned any "flouting" of the directions of the Committee of Inquiry. A mere consideration of the date at which the grant was made will show that even if there has been any breach of the direc-

[1] British Medical Journal, October 3rd, 1908.
[2] Page 29 of Report for 1909.
[3] Page 27.

tions, the Fund has not condoned it. The annual distribution takes place in December and is necessarily based on the accounts of the preceding year, while in the case of hospitals with medical schools these accounts are supplemented by a certificate from the hospital that the accounts of the current year, when completed, will show that the rule as to medical schools has been observed. The accounts of St. George's Hospital, in which it is alleged that a breach of the directions is disclosed, were published some months after the last grant was made. The judgement of the Fund upon these accounts, whatever it may prove to be, will be expressed in the usual course by means of this year's distribution, and the time at which this judgement is formed and published has not yet arrived.

While it would be premature, therefore, for any one connected with the Fund to express an opinion on the questions raised in reference to the accounts of St. George's Hospital, it may be added that the Fund was in correspondence with this hospital during the course of the year 1909 on the subject of the principles involved, and that the question whether or not these principles have been observed has necessarily come before the Fund, in the course of the ordinary examination of the accounts of the hospital with a view to the forthcoming distribution.

On the question of sums paid to medical schools prior to the date of the report of Sir Edward Fry's Commission of Inquiry, the action of the Fund is equally clear. The phrase in the report on which your charge is based—namely, "the schools still remain debtors to the hospitals in respect of these pecuniary contributions made to them," is qualified by a reference to a previous paragraph; and as a result of this qualification the Commission arrived at the conclusion that "the great uncertainty which, in many or all cases, attends any attempt to ascertain the intentions of the original founders of the hospitals and medical schools, the impossibility of knowing what were, from time to time, the exact motives in the minds of the subsequent donors and subscribers, and the complexity of the relations which have existed between hospitals and schools, seem to render any attempt to open up the transactions in the past between the hospitals and schools very undesirable, even if it were possible." The attitude of the Fund towards these past payments is based upon the actual terms of the Report of the Commission.

The Fund is administered under the provisions of the Act of Parliament specially passed in 1907, and the governing body, appointed in accordance with that Act, may be relied upon to take whatever precautions may be necessary to ensure that the conditions which are binding on all hospitals applying for grants, including the condition that no part of the general funds subscribed for the relief of the sick poor is diverted to the purposes of medical education, are duly observed by every hospital which receives assistance from the Fund.

Yours faithfully,
(Signed) SAVILE CROSSLEY,
FREDERICK M. FRY,
Honorary Secretaries.

PLAGUE INVESTIGATION IN INDIA.

THE Advisory Committee for Plague Investigation in India has made a further report,[1] as follows:

XXXIII.—THE EXPERIMENTAL PRODUCTION OF PLAGUE EPIDEMICS AMONG ANIMALS.

In two previous series of experiments the Commission showed that healthy guinea-pigs did not contract plague when kept in close confinement with plague-infected guinea-pigs so long as fleas were absent, and that in the presence of fleas the disease readily spread from the infected to the healthy animals. It was objected by Gottschlich that the results did not necessarily apply to rats and could not be used as an argument bearing on the question of the mode of propagation of plague among rats in nature. The present paper details experiments showing that exactly the same results are obtained when guinea-pigs are replaced by rats. Healthy wild Bombay rats were confined in small huts with other rats which had been inoculated with, and subsequently died of, plague; in one hut in each experiment abundant fleas were present, in the other there were no fleas. Considerable difficulty was experienced in securing the complete freedom of the control rats and huts from fleas, but the following results were obtained in eight experiments in which this condition was obtained:

	Huts Containing Fleas: About 24 Fleas per Rat.	Huts Containing no Fleas.
Inoculated rats put in	70	84
Inoculated rats died of plague ...	63 = 90.0%	73 = 86.9%
Uninoculated rats put in	125	125
Uninoculated rats died of plague ...	57 = 45.6%	0

In seven other experiments the control huts were not altogether free from fleas, one or two fleas being found in each. In these 105 healthy rats were exposed to possible infection from 78 rats dying from inoculated plague, and only 1 died of plague. In the corresponding huts in which fleas were more abundant, 64 inoculated rats died while living with 105 healthy rats, and of these latter as many as 38 (36 per cent.) took plague and died. These experiments, therefore, support the view that the rat flea is of paramount importance in the dissemination of plague among rats. A few rats dead of plague were eaten in both groups of huts, but the figures show that this was of no account in spreading the infection.

XXXIV.—RESOLVING (CHRONIC) PLAGUE IN RATS.

The abscesses in the viscera, especially in the spleen, and in the peripheral lymphatic glands, some of which contain living plague bacilli, which have previously been described as "chronic plague," are shown to be plague lesions in the process of healing; the name "resolving plague" is more appropriate. These appearances have been found frequently in rats in Belgaum and Poona, and a re-examination of Bombay rats shows that they also occur there; they had previously been found only in Punjab villages. It is also shown now that they are found most frequently towards the close of, and immediately after, the acute plague epizootic. The lesions in the spleen and mesenteric glands often ultimately find their expression in peritoneal adhesions. No evidence has been obtained that these abscesses are ever actually of importance as a source of acute rat plague.

XXXV.—ON THE SPREAD OF EPIDEMIC PLAGUE THROUGH DISTRICTS WITH SCATTERED VILLAGES.

In large towns, such as Bombay, the infection of plague is carried over from one epidemic to the next by the persistence of acute plague among the rats, accompanied by a few human cases. But in small communities each annually recurring epidemic is separated from that preceding by an interval more or less prolonged, in which plague cannot be found in either rats or men. It is obviously an important practical question in such places whether each successive epidemic has its origin from remnants left over *in situ* from the previous epidemic, or whether on each occasion infection is due to plague bacilli being brought in afresh from outside. Towards the solution of this question of "recrudescence" or "importation" a great mass of data has been collected and discussed by Major Lamb relating to the plague history over a period of four or five years of more than 2,500 villages in the Punjab and United Provinces. Dr. Greenwood, Statistician to the Lister Institute, contributes the first part of an analysis of these data by statistical methods. The chief conclusions are (1) that the occurrence of epidemics among the villages is not a chance distribution; (2) that the size of the village is an important factor, the larger villages being more liable to attack; in two out of the three districts investigated the distribution of epidemics among villages of equal size has not been shown to be other than random; (3) that the fact of a village having been infected in any one epidemic does not render it more liable to be infected in the next following epidemic; (4) that a study of the distribution on maps of infected villages month by month suggests a spreading out of

[1] *Journal of Hygiene*, vol. x, No. 3 (Fifth Special Plague Number), pp. 313-568, November, 1910.

infection from various centres. On the whole, therefore, the authors conclude that importation is a more important factor than recrudescence in the annually recurring epidemics in these villages.

XXXVI.—Observations on Plague in Belgaum, 1908–9.
XXXVII.—Observations on Plague in Poona, 1908–9.

These two papers contain the result of a close inquiry, lasting in each case for a full year, into the occurrence of plague in rats and men in Belgaum and Poona, together with studies of rats and fleas. The facts collected under the former heads do not lend themselves to summary treatment. With regard, however, to the fleas, it was ascertained that there was a definite seasonal variation in the prevalence of fleas which is closely correlated with the seasonal prevalence of plague. Thus:

	Belgaum.		Poona.	
	Plague Deaths Average per Week.	Average Number of Fleas per Rat.	Plague Deaths Average per Week.	Average Number of Fleas per Rat.
January	9	5.9	22	5.0
February ...	6	7.7	5	4.8
March	1	5.9	1	4.4
April	0	5.6	1	2.5
May	0	3.9	1	2.4
June	1	7.4	0	2.2
July	2	14.5	0	4.5
August	9	16.3	2	8.8
September ...	26	16.9	28	9.1
October	23	15.2	102	7.6
November ...	23	13.6	89	7.2
December ...	19	8.3	46	6.7

These results, therefore, fully confirm the data already obtained in Bombay, Kasel, and Dhand. The climatic conditions in Belgaum and Poona are quite different to those which prevail in Bombay. This strengthens the conclusion that the prevalence of plague depends upon the prevalence of fleas rather than that both phenomena are independently conditioned by circumstances of temperature, etc. The present data suggest a connexion between the atmospheric humidity and flea prevalence. In Belgaum an interesting census was made of the various animals living in the native houses; there was no evidence that cats afforded any protection. For the valuable discussions of the causes of the rise and fall of epidemic plague in these towns the original memoirs should be consulted.

XXXVIII.—First Report on Investigations into Plague Vaccines.

Dr. Rowland, of the Lister Institute, working at Elstree under the direction of the Advisory Committee, has attempted to isolate from plague bacilli the substance which, when inoculated into animals, arouses an immunizing response. In a series of experiments conducted by exact methods he shows that after killing the bacilli with chloroform and drying with anhydrous sodium sulphate a nucleo-proteid may be extracted from the bodies of the bacilli which possesses immunizing properties of a high order. A single dose of 0.001 to 0.01 mg. reduces the mortality on subsequent inoculation with virulent plague from about 70 per cent. to about 13 per cent. The whole bacilli killed with chloroform given in the optimum dose are much less efficacious. The inquiry is still in progress

XXXIX.—Interim Report by the Advisory Committee.

The following statement embodies the chief conclusions which have been provisionally reached by the Advisory Committee as the result of the investigation made under their direction from 1905 to 1909 into the mode of spread of plague in India.

1. Considerable epidemics of human plague consist almost entirely of cases of bubonic plague, and are directly dependent on the occurrence of epidemic plague in rats The development of the rat epidemic precedes the human epidemic by an interval of about a fortnight. There is no evidence that any animals except rats play an important part in plague epidemics.

2. *Epidemic Plague in Rats.*

(*a*) Fleas which have sucked the blood of a plague-infected rat can transmit the disease to healthy rats to which they are transferred. The plague bacilli multiply in the stomach of the flea, and the flea may be still capable of conveying infection three weeks after having imbibed plague-infected blood.

(*b*) If plague-infected rats are kept in close confinement along with healthy rats, no epidemic of the disease occurs in the absence of fleas. In the presence of rat fleas the disease spreads from the infected to the healthy animals, and the rapidity and severity of the epidemic so produced is in proportion to the abundance of fleas.

(*c*) Rats may be infected by feeding them upon the bodies of other rats dead of plague. The distribution of the lesions in the bodies of naturally infected rats corresponds with that in rats experimentally infected by means of fleas, and not with that in rats infected by feeding. The Committee therefore conclude that *in Nature plague is spread among rats by the agency of rat fleas.*

3. *Epidemic Plague in Man.*

(*a*) Bubonic plague is not directly infectious from man to man, as is shown by the experience of plague hospitals, where there is no tendency for the disease to spread from the sick to the attendants.

(*b*) Material epidemics of plague in man are always associated with epidemic plague in rats. Epidemic plague among rats provides a large number of infected rat fleas, and, owing to the mortality among the rats, brings these fleas on to human beings.

(*c*) Rat fleas (*Pulex cheopis*) bite human beings, especially in the absence of their natural host.

(*d*) Rat fleas containing plague bacilli and found capable of transmitting plague to animals may be caught in plague-infected houses.

(*e*) Animals susceptible to plague (guinea-pigs, monkeys) placed in plague-infected houses if unprotected from fleas may contract the disease; whereas such animals under the same circumstances remain free from plague if protected from fleas.

(*f*) The Commission has also performed numerous experiments with a view of testing other possible modes of infection, and have found that—

(i) In the absence of fleas no epidemic resulted when animals susceptible to plague (guinea-pigs) were kept in close contact with infected animals, although the animals took their food off floors grossly contaminated by the excreta of their infected companions.

(ii) Susceptible animals (guinea-pigs) caused to live upon and feed off floors artificially saturated with plague cultures failed to contract the disease.

(iii) The excreta of plague-infected patients may contain plague bacilli, but the bedding, etc., of plague patients soiled with excreta containing plague bacilli was not found to be infective to highly susceptible animals caused to live in and upon the bedding.

The Committee, therefore, consider that *in the great majority of cases during an epidemic of plague man contracts the disease from plague-infected rats through the agency of plague-infected rat fleas.*

4. *The Seasonal Recurrence and Spread of Plague.*

(*a*) The Committee has obtained no evidence that under ordinary conditions the plague bacillus survives for more than a few days outside the bodies of men, animals, or fleas.

(*b*) In large towns plague may persist throughout the year, since a few cases of acute plague in men and rats occur during the non-epidemic plague season.

(*c*) In villages there is no satisfactory evidence that such persistence is of other than exceptional occurrence, and it seems probable that the recurring annual epidemics in such places are due in most cases to fresh importation of the infection.

(*d*) There is no evidence that plague infection is carried for more than short distances by the spontaneous move-

ment of rats. Plague appears to be commonly imported into a fresh locality on the persons of human beings, though the transference of infected rats in merchandise must be considered.

(*e*) In districts which suffer annual epidemics of plague, the rat epidemic, on which the human epidemic depends, occurs during some part of that season when the prevalence of fleas is greatest.

LITERARY NOTES.

IN the *Scottish Historical Review* for October there is an interesting note by that well known antiquary, George Neilson, LL.D., of Glasgow, on the Pills of Pope Alexander, of which some notice will probably be acceptable to readers of the JOURNAL. He calls attention to the fact that in the Cartulary of Glasgow in its oldest shape, the *Registrum Votus*, there were certain entries which Professor Cosmo Innes, in editing the *Registrum Glasguense* in 1843, relegated to an appendix. Amongst them was one very interesting reminiscence of early medicine; and yet more interesting was a charm against colic. The latter was the subject of an essay by Dr. Alexander Tille, who, in *Scots Lore*, pp. 61–78, discussed at some length the significance of "Thebal Guth Guthain," the words of power which were prescribed as the posy of a ring to be used *contra dolorem ylii*. The two formulae are printed on p. 110 of the *Registrum*, and in the preface Professor Innes said of them: "The medical prescriptions against colic, savouring shrewdly of art magical, and the recipe for the famous pills which the Pope Alexander himself had deigned to use, are at least characteristic and amusing. They are both in a hand as old as 1200." From the prescription which is given it appears that the pills were composed of a variety of ingredients, including calamus root, cubeb, nutmeg, gum, spikenard, gillyflower, colocynth, myrobalan, agaric, senna, and aloes, and the claim made for them was that they would clear the eyesight, strengthen the hearing, comfort the soul, repair the memory, guard the health, and, above all, regulate the human body. This is surely concise and comprehensive enough, and will favourably compare with the advertisements of any modern quack nostrum vendors. Dr. Neilson in the same article calls attention to a volume in his possession, written probably at a considerably later date than the Glasgow *Registrum*, and which he thinks probably dates from the fifteenth century. On the fly-leaf of this volume there are three prescriptions. One is for a most comprehensive antidote powder; the next is a powder against flatulence and gross and phlegmatic tumours, to warm the stomach and aid digestion, and the third is a prescription for the pills of the Most Glorious King of Sicily. The same virtues are claimed for these pills as for those of Pope Alexander, and their composition is very much alike. But, while it is a moot point whether the patient when taking the pills of Pope Alexander should change his diet, in the case of the King of Sicily's pills the advice is definite that he should do so. The article concludes with some remarks on the problem of the date and of the identity of the "Most Glorious King of Sicily" and the Pope, "those high historic personages so strangely associated in the prescription for the confection of this momentous pill," and the author concludes that the King can hardly have been other than William (son of Roger), King of Sicily from 1154 to 1166, renowned in chronicle (despite his traditional name of William the Bad) for many victories over the Saracens, and especially associated with the great Pope Alexander III as his ally from 1161 until 1166, during the struggle for the Papacy against the Emperor Frederick.

An interesting article by Dr. Félix Regnault on the collections of Roman ex-votos in the Archaeological Museum of Madrid appeared in the *Progrès médical* for September 17th, in which the author shows very clearly how strong a claim these antique representations of human suffering have upon the interest and attention of the student of pathology. For the ex-voto of antiquity differs from its modern equivalent, inasmuch as it is frequently an exact reproduction of the deformity or disease from which its donor suffered, instead of the perfectly normal arm or leg which may be seen by the score in foreign churches to day; and, rude as some of them undoubtedly are in many cases, these thank-offerings are wonderfully lifelike and correct. The Madrid collection of terra-cotta ex-votos, all of which were found between forty and fifty years ago by the Marquis de Salamanca at Calvi, near Rome, and presented by him to the archaeological museum, is a very large one, and includes numerous specimens of a somewhat rare kind. For instance, it contains a great many models of deformed hands, which are very seldom found in any collection of Greek or Roman ex-votos. Several of these hands are atrophied, with bent fingers and deeply hollowed palms; others have abnormal lines on the palm; and in more than one case the patient had obviously suffered from tremor. Again, deformed feet and legs are somewhat unusual, but the Madrid collection includes several specimens of flat-foot, malformed ankles, and swollen or oedematous legs. An interesting fact to be noted with regard to the numerous examples of foot deformity is that in a great many cases the malformation is undoubtedly due to ill-fitting footgear. We learn from Dr. Regnault that such deformities were by no means uncommon amongst the Romans, who wore shoes very like our own, and this explains the fact that many of these models have the toes bent and shrivelled, as if their owner had crippled himself by habitually wearing tight shoes. Even those who shod themselves with sandals, however, nowadays vaunted as the ideal foot-gear, were not exempt from certain ills. The strap of the sandal, which passed along the root of the toes, and was twisted round the little toe, often pushed the latter out of its natural position by pressing it against the fourth, a deformity, according to Dr. Regnault, which is frequently to be observed in antique statues, even in such as have bare feet. In several specimens of the Calvi collection the little toe is stunted and atrophied, whilst in others the last joint of the same toe is thin and tapering; in one case the fifth toe is a hammer-toe, and in another it is pressed right under the fourth. Deformed heads occur very rarely amongst the antique ex-votos, but the Madrid museum is fortunate enough to possess several. One specimen represents the head of a woman, whose face is asymmetrical, and swollen in the submaxillary region; another is clearly a case of convergent strabismus, whilst a third has the right eye more widely open than the left. Yet another specimen appears to be a copy of the head of a dead child. Models of the uterus after delivery, women's breasts, and the male external genital organs, abound in every collection, and of these Madrid possesses an enormous variety. Many of the former, which differ widely from each other, present difficulties in the way of diagnosis; whilst the last resemble every known similar specimen inasmuch as each is represented with a long prepuce which entirely covers the glans. Every specimen in this collection has a phimosis, though of varying forms, and, with one exception, are all in the erect state, the testicles raised and projecting; the penis is stretched, but being prevented from rising by the phimosis, it points downwards in an oblique position. The breasts are of every variety in shape and form, and every deformity of the nipple which prevents suckling is represented.

It is announced that Mr. Murray will publish on December 8th a work by Professor Ronald Ross, of Liverpool University, entitled *Induced Cell-Reproduction and Cancer*, which, it is said, promises to throw fresh light on the eternal problem of the treatment of cancer. The book is not written for specialists alone.

Watering places are the scene of many flirtations, and are therefore hunting grounds for mammas who have daughters to get off their hands. This, of course, is by no means new. In the early part of the eighteenth century we find one of his fashionable friends writing to John Gay, author of the *Beggar's Opera*, who, after losing his money by the bursting of the South Sea Bubble, was trying to recover from the shock at Tunbridge Wells. The correspondent was Lady Suffolk, who wrote to the poet as follows:

> The place you are in has strangely filled your head with cures and physicians; but (take my word for it) many a fine lady has gone there to drink the waters without being sick, and many a man has complained of the loss of his heart who had it in his own possession. I desire you will keep yours, for I shall not be very fond of a friend without one, and I have a great mind you should be in the number of mine.

UNQUALIFIED PRACTICE.

Report by the Privy Council.

The report as to the practice of medicine and surgery by unqualified persons in the United Kingdom, issued as a Blue Book on November 24th, is the outcome of the action taken by the General Medical Council on the advice of the Unqualified Practice Prevention Committee, moved for by Dr. Langley Browne, one of the direct representatives of England. This committee, of which Dr. Langley Browne is chairman, was appointed in November, 1907. It first of all ascertained, with the assistance of the Lord President of the Council, the Secretary of State for Foreign Affairs, the Secretary of State for the Colonies, and the Secretary of State for India, the legal provision existing in the Colonies and dependencies and foreign countries for the prevention of medical practice by other than legally-qualified persons. After considering the evidence thus obtained, the General Medical Council expressed the opinion that the Medical Acts did not sufficiently enable "persons requiring medical aid" to "distinguish qualified from unqualified practitioners," and that it is contrary to the interests of the public that medical and surgical practice should be carried on with impunity by persons holding no recognized qualification. The Council therefore requested the Government to take steps for the appointment of a Royal Commission to inquire into the evil effects produced by the unrestricted practice of medicine and surgery by unqualified persons. The Lord President of the Council thought it expedient in the first place to cause letters to be addressed to the Local Government Board, the Scottish Office, and the Irish Government, asking that a circular should be issued to medical officers of health in each country inviting their opinion as to whether the practice of medicine and surgery by unqualified persons is assuming larger proportions, and as to the effect produced by such practice on the public health. The opinions thus collected are summarized in the Blue Book, of which we can in this issue give only a preliminary notice.

England and Wales.

Replies were received from over 1,600 medical officers in England and Wales, some giving their whole time to their duties, others engaged also in general practice. It is stated that in many cases these officers were at considerable pains to obtain as full information as possible, and wrote to all general practitioners in the district, or called in the aid of the local Division of the British Medical Association or of the Local Medical Society. The Local Government Board considers therefore that the replies may be taken to represent the opinion not only of medical officers of health but also of a large number of medical practitioners. In an appendix the statements as regards those towns in England and Wales having a population of 20,000 at the census of 1901, showing the extent to which the practice of medicine and surgery by unqualified persons and the effect of such practice are summarized. Taking the 217 towns in this appendix it appears that in 82 unqualified practice in one form or another is either increasing or already exists in large amount; in 75 such practice is stated to exist to some extent; in 27 there is reported to be very little, while only in 30 is it stated that unqualified practice is entirely non-existent. As to the three remaining towns no information is forthcoming.

It is stated that in London the amount of unqualified practice does not appear to be so great as in provincial towns. In two metropolitan boroughs only is it said to be increasing, in five there is a large amount; in eleven the practice exists to some extent, while in seven it is non-existent or very small. As regards four metropolitan boroughs the extent of the practice is not stated. It is added that there is some evidence pointing to the conclusion that unqualified practice increases in large centres of population, attracting dwellers in the smaller urban and rural districts. This tendency is sustained by the ready means of access to towns, by the extensive advertising in the newspapers and magazines, which brings quackery of all kinds under the direct notice of all classes, and by the facilities extensively used of obtaining advice and medicine through the post.

On the question of whether unqualified persons represent themselves to be registered or assume titles which would lead the public to believe that they are regular medical men, the evidence is stated to show that the educated classes as a rule are not deceived in this respect, but that it is probable that a large number of people among the more ignorant section of the community are deceived into the belief that the person they consult is in some way or other qualified to give medical or surgical advice. The fact that many societies accept the certificates of unqualified persons is held to assist this belief, which, it is stated, is further strengthened by the practice of some registrars of deaths in accepting certificates of death granted by unqualified persons without further inquiry and entering them as uncertified deaths. The practice is adversely commented on by several medical officers of health in their response to the inquiries.

Scotland.

The Local Government Board in Scotland states that it is well known that the unrestricted practice of medicine and surgery by unqualified persons is widespread in Scotland as elsewhere, but that it is difficult to obtain precise information as to the facts. The report consists of a summary and a tabular appendix.

In the summary it is stated that while there is no evidence that bonesetters are increasing in number there is sufficient evidence that they are certainly not decreasing; almost everywhere, but particularly in small towns the bonesetter is to be found. With regard to midwives, it is stated that "the qualified midwife" or trained nurse is steadily gaining ground, but that there still remain many untrained midwives, though the reports received do not specify in any great degree the results of this kind of practice. In several small towns "eye and ear specialists" advertise in local papers and in some others. Such persons are common, but taking the whole country it does not appear that the medical officers of health believe that they seriously encroach on the realm of medical or surgical practice proper. Attention is drawn to the failure to comment on the well-known fact that many opticians habitually test the eyesight of all classes of persons and provide spectacles, and it is added that the whole area of prescribing opticians is on the borderland of unqualified practice.

The general conclusion is that, although the information obtained from the reports is not large, it is confirmatory of information obtained from other sources, and indicates that there is a fair ground for a more detailed inquiry.

Ireland.

A summary of the replies received from the medical officers in Ireland shows that chemists are consulted extensively, and prescribe for patients; that they likewise perform minor surgical operations and engage in dentistry; and that injurious results of their practice are often observed. Proprietary medicines are vended to various extents in a considerable number of towns and villages, and generally to the detriment of the patients. Bone-setters are employed in many districts, and necessarily with bad results; there are also cancer curers, whose plasters are stated to inflict very great pain and to injure seriously some of the patients. Charmers of erysipelas, ringworm, and sprains are mentioned, as well as herbalists, Christian Scientists, unqualified dentists, dental mechanics, and "handy women" midwives.

The Local Government Board has issued an order under Section 41 of the Housing Act, 1909, prescribing the forms of advertisement and notices to be used in connexion with powers and duties of a local authority under Part I of the Act of 1890. The use of the prescribed forms is obligatory, and they are intended to replace those issued under the Act of 1890.

At a recent meeting of the students of Middlesex Hospital Medical School, it was resolved to raise amongst past and present students a sum of 1,000 guineas for the endowment of a memorial bed in grateful appreciation of the great work done for the hospital and its school by His late Serene Highness Prince Francis of Teck. The general memorial fund appears to be making excellent progress, a sum of over £10,000 having been raised in little over a fortnight.

British Medical Journal.

SATURDAY, NOVEMBER 26TH, 1910.

A PLEA FOR THE NASO-PHARYNX.

A FEW years ago the University of London made it possible for Bachelors in the Faculty of Medicine to proceed to higher degrees therein through the special branch of medicine to which each is devoting his career or has paid more particular attention. The same general idea had previously been adopted by the University of Durham when drawing up its regulations for the examination of candidates for the degree in medicine granted by that university to practitioners of fifteen years' standing, and may be said also to have underlain the arrangements made by all universities which impose any kind of test on those who, being already bachelors of medicine and surgery, desire to proceed to the doctorate or mastership; the centre-point of such test has always been some subject of the candidate's own selection.

But no other university has elaborated this principle in a fashion corresponding to that of the University of London. That body has established eight separate divisions of medicine through which bachelors can proceed to the M.D. and M.S., and may therefore be regarded as the first to put a university seal on the characteristic feature of the organization of latter-day medicine and surgery, namely, the development of specialism. The list, though long, is probably not yet complete, for the followers of other specialities are likely to put in claims for corresponding recognition. Indeed, there is reason to believe that a movement is already on foot in favour of the class of practitioners to whose work a large part of the earlier pages of this issue is devoted.

For the moment we have nothing to say either for or against the proposition in question, but merely wish to express a hope that if it ever comes within the area of practical politics, the Senate of the University of London will take into very serious consideration the extent to which diseases of the nose, ear, and throat respectively may rightly be deemed separate studies.

The reason for putting forward this aspiration on the present occasion is that Dr. Edward Law, in the very interesting remarks by which he initiated the proceedings of the Section of Otology, indicated a possibility of a further development in the department of medicine in which he is an honoured leader.

Time was, and not so very long ago, when otology, rhinology, and laryngology were regarded as an inseparable trinity. More recently the professors of these conjoint sciences have fallen into two camps, with the larynx as the centre-point of the one, the ear as that of the other. As for rhinology, or the care of the naso-pharynx, this at present resembles Mahomet's coffin in floating 'twixt a laryngeal earth and an otic heaven, not definitely belonging either to one or to the other. One outcome of this state of affairs appears to be that the trinity, having been resolved into a duality, is not unlikely further to be divided into three distinct unities; in other words, development of a new speciality appears to be imminent.

We by no means pretend that the number of specialities which may rightly be founded on the lesions of any given part of the human frame is necessarily limited by the size of that part, but we do very seriously maintain that there is no room for three specialities in the section of the body limited below by the bifurcation of the bronchi, and above by the roof of the pharynx.

Hardly five years have passed since we said farewell to Garcia, and that great man Politzer is still fortunately with us; but despite the comparatively short time which has elapsed since the one began to write and the other established the use of the laryngeal mirror, immense progress has been made both in laryngology and otology. Those who have no expert knowledge of the latter science will grasp at once how complicated a subject it has become if they look at the paper by Dr. Bárány which appears in this issue.

Nor is it knowledge alone that has increased. The technique employed in the respective sciences is now of so delicate a character as to make long devotion to the one or the other essential to the acquirement of a full degree of manual dexterity. Then, again, whatever may have been thought at one time, it is now clearly recognized that between diseases of the larynx on the one hand and diseases of the ear on the other, there is little more essential connexion than exists between diseases of these localities in general and those of far distant organs. The cleavage which has taken place between laryngology and otology has therefore been almost inevitable and the segregation of otologists from laryngologists is perfectly natural.

But what is the right position of rhinology? On this point little more need be said than that since there is no necessary or even habitual connexion between diseases of the larynx and diseases of the upper air passages—the mouth, the nose, and the pharynx—rhinology can scarcely be regarded as an intrinsic part of the science of laryngology.

It might, of course, be argued that rhinology can stand by itself, but that contention would hardly be accepted by independent medical men, and more especially by those who realize how vast a proportion of all aural diseases originates in the naso-pharynx, and how commonly disease of the ear is associated with diseases in the upper pharynx or nose. Indeed, Dr. Edward Law would have been fully justified in going even further than he did on this occasion, and in urging that a definite separation between the study of the diseases of the naso-pharynx and those of the ear would be a retrograde movement in what has hitherto been an advancing science, and spell calamity for all concerned.

The part played by the naso-pharynx in setting up disease of the ear is of course known to all otologists, but we venture to doubt if in the course of his daily work every otological practitioner keeps the relations between the naso-pharynx and the ear as constantly in mind as he should.

For evidence in support of this suggestion we need go no further than the contents of this issue. If all otologists attached sufficient importance to the condition of the naso-pharynx, it would hardly be possible for Mr. Mark Hovell, Consulting Aurist to the London Hospital, to refer to the case of a patient who had had his tympanum inflated by an aurist, but presented himself for further treatment with his nose stuffed with polypi which had received no attention whatever

Then, again, it is to be remembered that bygone adenoids very commonly lie at the root of those innumerable cases which, developing little by little, are eventually written down as either middle-ear catarrh or middle-ear sclerosis. If adequate weight were given to this consideration, would the vast majority of all adenoid cases be left to be treated by laryngologists, who, as such, are concerned neither with the prevention nor cure of aural disease? In this connexion appeal may again be made to Mr. Mark Hovell, who mentioned as a common experience on his part the discovery of adenoid growths on which operation had been performed, but which were left untouched in the very situation where they are best calculated to do harm to the hearing.

We therefore regard Dr. Edward Law's suggestion that naso.pharyngeal topics should be more frequently discussed at meetings of otological societies as one which should receive the very fullest attention, not merely by way of preventing the development of rhinology as an independent speciality, but in the interests of otology itself, and of the patients with whom otologists deal.

Otology has no doubt made very great progress, particularly in the way of obviating the more dangerous outcomes of aural disease and the elaboration of operations on suppurating mastoids. This is satisfactory and creditable to otologists so far as it goes, but, after all, it is progress of quite limited scope, and is not of the kind which the public would best appreciate, or the medical profession as a whole would most like to see. For years past a large number of clever brains, and equally clever fingers, have been engaged in the service of otology, but despite that fact the power of aurists to relieve deafness or to restore hearing remains much what it was twenty years ago, and no material progress has been made in the prevention of deafness. The net outcome is that aural disease still remains the happiest hunting ground of quacks, and that the proportion of deafness amongst the general population has not been materially diminished. It is quite possible that the cure of established deafness will always present more or less insuperable difficulties; but it is equally possible that in respect of the prevention of deafness rapid progress would be made if otologists as a whole took Dr. Edward Law's counsel to heart and put his suggestion into practice.

To other communications made to this Section and to that of laryngology we have no space to refer, but we must at least draw attention to the paper by Dr. Milligan on aural tuberculosis, as it is one of general interest. His suggestion that a common cause of aural tuberculosis in infants is direct infection of the Eustachian canal by the regurgitation of infected milk is both ingenious and attractive. It is one, moreover, which, in view of the attention which this distinguished investigator has paid to the general subject, we are disposed to accept whole-heartedly, despite the absence of much in the way of direct proof.

EPSOM COLLEGE.

Epsom College is a foundation of which the medical profession has every reason to be proud. In its evolution it has passed through several phases of difficulty and even crisis, but from these it has triumphantly emerged, till at the present time it stands, in point of educational efficiency, in the front rank of the public schools of this country. In proof of this we need only point to the success achieved every year by Epsomians at the universities and medical schools, and to the number of men distinguished in various spheres of activity who have received their early training at the college. The growing popularity of the school is shown by the steady increase in the number of the boys for many years past.

This increase has made large additions to the buildings necessary, and the provision both for work and for play is fully adequate to modern requirements. Moreover the arrangements for the comfort of the boys are such as must astonish those who remember the roughness of school life even thirty or forty years ago. The dormitories are airy and have plenty of cubic space. The sanitary arrangements are of the most modern type and no expense has been spared in making them as good as possible. They are examined by an expert at frequent intervals. The Propert Library and the Holman Reading Room are well supplied with books, and the best English literature—taking that term in its widest connotation—is available for the boys. The school museum contains valuable collections of plants, shells, minerals, and insects. The playing fields are large and well adapted for their purpose, and there is abundant provision for games, gymnastic exercises, swimming, and all the manifold arrangements for the development of a sound body as the necessary instrument of a sound mind, which is the modern ideal of education.

Epsom underwent the severe ordeal of an inspection by the Oxford and Cambridge Schools-Examination Board in June last, and the report was such as must gratify all who take an interest in the school. In classics the teaching was pronounced to be very satisfactory, in mathematics the staff was found quite adequate for the needs of the school and the teaching was said to be efficient and the general work satisfactory. For the teaching of science, both elementary and of a more advanced kind, the school was stated to be unusually well equipped; the staff was considered adequate and the teaching efficient. Favourable mention was made of the laboratories and equipment. The chemical laboratory affords adequate accommodation for even the largest forms. The large physics laboratory is 45 ft. by 24 ft., and is fitted with four large central tables, a master's table, a wall table down one side, and three smaller wall tables. Galvanometer stands are fixed to the wall, and ample cupboard room is provided. There is also a smaller laboratory, 20 ft. by 24 ft., properly fitted with five tables, sinks, etc., for special work, and a battery room adjoining. There is also a good lecture theatre, a preparation room, and a dark room. The laboratories are provided with a plentiful supply of suitable apparatus, the electrical apparatus in particular being described as very good for a school laboratory. The new biological laboratory consists of two large rooms, which can be thrown into one and separated by means of a sliding partition. The rooms are very well lighted, and there is a working bench running the whole length of the window side of the two rooms; it affords accommodation for twenty-five students. One of the rooms can be readily darkened for lantern work, and can be used as a class-room. We lay stress on the part of the report that relates to the teaching of science, as some fifty per cent. of the boys are intended for the profession of medicine. Nothing better shows how thoroughly Epsom is up to date than the ample laboratory accommodation,

which compares favourably with that of many medical schools as these were thirty years ago. We note with great pleasure that in appearance the boys made a very favourable impression on the inspectors, who describe their manner as friendly and natural. The inspectors were much struck, not only by the orderliness, but by the earnest tone of the various classes visited. It is added that under the present headmaster and his staff the school is admirably fulfilling the main object for which it was founded, by performing a great service to the medical profession, and it is also providing an excellent education for those of its members whose future lies in other directions.

The board considered the report of the inspectors satisfactory, and recommended the school for continued recognition by the Army Council as a school preparing candidates for "leaving" certificates for army purposes. The result of the inspection was that the headmaster received a communication from the Army Council to the effect that, consequent on the satisfactory report of the inspection of the recommendation by the Oxford and Cambridge Schools Examination Board, the approval which in 1905 was given to the school, in respect to the grant of leaving certificates for army purposes to pupils, would hold good for a further normal period. We most heartily congratulate all those to whose self-sacrificing labours it is due that Epsom has reached so high a position in the scholastic world on the emphatic witness to the success of their efforts borne by the body most competent to judge.

We commend the school to the favourable notice of all members of the profession who wish to give their boys that best outfit for the battle of life, a first-class education. At Epsom this can be got at a comparatively small cost without any inferiority of standard as compared with the best public schools.

CORONERS AND DEATH CERTIFICATION.

In the Journal of July 9th, 1910 (p. 98), the bill to amend the law relating to coroners and regulating the certification and registration of deaths, introduced in the House of Commons by Sir William Collins, was discussed and the manner, at once impolitic and ungenerous, in which its provisions affected the medical profession was pointed out. It is with much satisfaction that we call the special attention of our readers to a paragraph referring to the bill in the report of the Proceedings of Council at its meeting on October 26th, published in the Supplement to the Journal of November 19th. That paragraph makes it clear that the Council of the Association is by no means overlooking the exception rightly taken by the profession to Sir William Collins's bill. It states that the Council has expressed its strong disapproval of the bill, and that the Parliamentary Subcommittee of the Medico-Political Committee has been instructed to take all necessary action to oppose the proposed measure. It is worth while drawing attention to the point, for a correspondent recently suggested that in each constituency the profession should combine to memorialize its local member of Parliament, and Dr. Distin of Enfield subsequently showed that in his own Division such action had already been taken. We were glad to publish these letters, because they afforded evidence that the medical profession is more alive to its interests than it used to be. But of course isolated action is of comparative little value, and it seems certain that should occasion arise the Council would organize general action, in addition to securing the opposition to the bill in the House by the means habitually at its disposition. The probability of any action being necessary is now, however, somewhat remote, for the bill never got further than being read the first time, and in view of the decision of the Government to appeal once more to the country is now practically dead. There is, of course, a possibility that it may be revived in a future Parliament, but that largely depends on whether its author, Sir William Collins, or one of its sponsors, Dr. Hillier, are re-elected. At the last election Sir William Collins's majority was reduced to about ten votes, much to the dismay of his many friends, who, in the case of so distinguished a member of the medical profession, sink all political prejudices and hope for his further appearance in the House. The number of such well-wishers, however, will have been materially reduced, it is to be feared, by his parentage of the bill in question, for no document of like purpose could well have been drawn up in a fashion more needlessly detrimental to the profession of which Sir William Collins is a member. The death certification part of the bill imposes on medical men the duty of certifying not only causes of death but the occurrence of death, the identity of the body with that of the person who has been under the medical man's treatment, and obliges him to pay a visit to the deceased person's house for these purposes; and all this without payment of any kind. In the coroner part of the bill there is equally little evidence of any endeavour to combine public with professional interests. Among other outcomes of its passage would be that all inquest fees would before long be diverted from the pockets of the medical profession as a whole into those of a new class of persons termed "medical investigators," and that while any sprouting barrister or solicitor of five years' standing would be a good candidate for a coronership, every medical candidate would have to be qualified both in medicine and in law. Medical knowledge in a coroner is at least as desirable as legal knowledge, and knowledge of medicine is made all the more necessary by this bill, because it extends the powers of coroners to dispense with inquests and to declare that deaths have been due to natural causes on their own authority. In the course of time most coroners, however trained, acquire ability to deal with reasonable success with the medical considerations of a case, but some of them pick up very quaint notions indeed. Recently, for instance, a London coroner gravely laid down the axiom that when death has occurred after haemorrhage from the mouth the cause of that haemorrhoge is self-evident. He made a statement to this effect not long ago, when taking advantage of his position to bully a medical witness who quite rightly hesitated to state the cause of death without a *post-mortem* examination in the case of a person whom, before death, he had never seen at all.

RAT PLAGUE IN EAST SUFFOLK.

The Local Government Board thinks it desirable that an official statement should be issued as to the steps which are being taken in regard to the occurrence of rat plague which has been observed in certain districts in East Suffolk. For several weeks past Dr. Bulstrode, one of the Board's medical inspectors, has been making local inquiries with a view to ascertaining the extent of the disease and to securing concerted action on the part of the various authorities. With him are associated Dr. Fletcher and Dr. Reece, also medical inspectors of the Board, and the three

inspectors are making investigations over a wide area, including West Suffolk and Essex. An expert staff, under the direct supervision of Dr. Martin, F.R.S., Director of the Lister Institute, has also been engaged for some time in investigating on a large scale the local prevalence of disease among rodents, the kind of rats predominating in the districts, and the flea parasites of these rodents. Other inspectors of the Board have also been instructed to make inquiries in various parts of England. Up to the present plague-infected rats have only been found in five districts. The Board's inspectors report that the various sanitary authorities are actively co-operating in taking the necessary measures. As regards the authorities in the county of East Suffolk, valuable help has been rendered by Dr. Heath, who has been specially appointed by the County Council to deal with the matter. It may be added, the statement continues, that although cases of plague in man are unlikely to arise, arrangements are being made by the various sanitary authorities for the early recognition and isolation of such cases should they occur. On November 17th Mr. Burns received a deputation from the East Suffolk County Council, and various questions of procedure were discussed at length. The President emphasized the need for continuous and persistent efforts on the part of local authorities as well as of individuals, who it was hoped would all co-operate in the taking of measures for the destruction of rats, and the prevention of their entry into houses.

THE NATIONAL DENTAL HOSPITAL.

A DINNER of past and present students of the National Dental Hospital, Great Portland Street, took place on November 18th, the prizes for the year being distributed during the course of the evening. It is, of course, an annual event, but this year was of unusual interest, for the President of the Royal College of Surgeons, Mr. Butlin, occupied the chair. This is a fact which may well be placed in the foreground, for it is high testimony to the position which the school has attained and a striking illustration of a fact on which Mr. Butlin had something to say in the course of the evening. Looking back to the first years of the institution, he asked whether any one at that date would have ventured to prophesy that members of the staff of the newly constituted hopital would now be acting as examiners at the Royal College of Surgeons, and one a Hunterian Professor. That fact, he indicated, crystallized the change that had taken place in the short period of fifty years, and exemplified the advantage which men derived from education and qualification. Evidence of the conditions formerly prevailing was supplied by recalling the kind of advertisements which used to appear, and the strange company which dentistry used to keep before the passage of the Act of 1878, and even for some time after the commencement of the new era. There was an individual who held himself out as a "dentist and sexton," and another who claimed chiropody and dentistry as his joint domain, while in the newspapers might be found the advertisement of a quack named Cosmos, who stated that he set teeth with diamond pivots and stopped them with emeralds, and had a new mode of extraction by steam, the most efficacious of any system practised. In short, in the middle of last century, no professional or any education was deemed essential to the practice of dentistry, which was regarded as work which a blacksmith could do as well as anybody else, and was mixed up with all kinds of vocations. But those times had happily long gone by, and to obtain a notion of the high development of dentistry at the present date it was only necessary to take a glance at current dental literature. It dealt with such highly scientific subjects as bacteriology and the vaccine treatment of pyorrhoea alveolaris, and with matters of national importance such as the relation between dental caries and national efficiency. The change was equally obvious to those who entered dental hospitals and medical schools, and he had to congratulate those present on the completeness of the equipment of the institution to which they belonged. Mr. Sidney Spokes, the dean of the hospital, in responding to the toast proposed by Mr. Butlin, said that the good work carried on at the hospital was increasing in amount, while as regards the efficiency of the school, out of fifteen students who had recently been sent up for their final examination thirteen had emerged successful. He then asked the chairman to present the prizes for the year. Mr. B. Mendleson proved to have carried off as many as six first or second awards, Mr. A. Barritt five, while Mr. A. A. Hume was the winner of the blue ribbon of the year, the prize for operative dental surgery, Mr. B. H. Jones coming second. A toast to the "Past and Present Students" having been proposed by Dr. Campbell Thomson, Dean of Middlesex Hospital Medical School, and acknowledged by Messrs. C. L. Donne and A. Barritt, Mr. F. R. Smith proposed the toast of "The Visitors." It was acknowledged by Sir Henry Morris, who mentioned that the General Medical Council had done a good deal lately towards obtaining information as to what was being done in other countries with reference to qualified and unqualified practice, and in general was looking after the interests of the dental profession. Mr. Kenneth Goadby, the vice-dean of the school, then proposed the toast of "The Chairman," and Mr. Butlin's brief reply thereto brought the proceedings to a close.

THE BIRTHPLACE OF MODERN SURGERY.

IN the October number of the *Glasgow Medical Journal* Dr. Hugh A. McLean gives an interesting account of the Royal Glasgow Infirmary, which may justly be regarded as the birthplace of modern surgery. The originator of the scheme which led to the foundation of this famous hospital was Jardine, Professor of Logic at Glasgow University somewhere about the year 1787; but it was not until four years later that a Royal Charter was obtained, the foundation stone being laid in the following year, 1792. The hospital buildings, which were opened to the public in 1794, were at first the reverse of spacious. The patients, who lived on the ground floor, appear to have been herded into one "ward with three small rooms accommodating in all nineteen patients." Twenty years later, however, an addition was made to the original building in the form of a block capable of holding another eighty beds. But if space was lacking in the wards, no such fault could be found with the operating theatre at the top of the house. This room, which had "an area of 42 ft. in circumference," contained "five tiers of high-backed seats, accommodating 200 students, the whole crowned with a stately dome"; whilst on the floor below was "a large and elegant surgery, where were arranged all the instruments, bandages, and fracture apparatus." During the first few years the staff of the Royal Infirmary received no salary, even in the case of the resident, who was likewise the hospital apothecary. (He did not rejoice long in these two offices, which were separated in 1799, when the hospital chaplain was appointed apothecary in his stead). It was not until 1807 that the physicians and surgeons who attended the Royal Infirmary received any monetary acknowledgement of their services; bu

in that year it was decided that the former should be given a yearly salary of £30 and the latter a third of that sum, though only after each should have attended the hospital gratis for a couple of years. In 1810, when the hospital finances were in a more flourishing condition ("chiefly from students' fees," as we learn from Dr. McLean), the pay was raised to £50 a year for the physicians and £20 for the surgeons. In 1829 a decree was passed to the effect that "each student feeing the infirmary should also fee the lectures of one of the physicians or surgeons," and to this decree Glasgow owes the existence of the St. Mungo Medical School, which was actually founded in this fashion. In the very year that Professor Jardine first suggested the need for an infirmary in Glasgow that city received a visit from a well-known quack, "Dr." Graham, "president of the council of health, and sole proprietor and principal director of the Temple of Health in Pall Mall, London." This Graham was the prototype of the modern "simple life" fanatic. Not only was he a rigid teetotaler and vegetarian, but he lived with his windows wide open, slept without blankets, never wore woollen clothes, and bathed in cold water morning and evening. "His treatment consisted of his celebrated *Earth Bath*. The patient, stripped naked, was placed on a glass stool, which was 'electrified' by means of his (Dr. Graham's) machine. Then he was rubbed down by a silken towel, and then buried up to the chin in the earth bath, the earth of which had been previously medicated by the doctor. This, however, was only a preliminary to the more marvellous course of treatment in the doctor's temple of health and electric bed. This bed, mounted on four crystal pillars, and so isolated that no part of the bed or bedding touched walls, roof, or floor, was covered with silk hangings, and finished off with silk damask curtains. It was of course, under the roof of the temple of health. . . . To this bed a continuous current of electricity was led from an 'electrifying machine' in another room; and one night in this bed had powers of rejuvenating and restoring the bodies used up, worn out, and fit for the scrap heap." Curiously enough, Graham was not at all successful in Glasgow, in spite of his announcement that he could cure all bodily ills, and "by his never-failing medicines, and by his scientific treatment of his patients, not only to prevent them from dying, but also through his wonderful discoveries he had absolutely brought a new generation of beings into life, who would never have made their appearance in this busy world unless through his marvellous skill and all-potent agency." After his failure in Glasgow Graham took refuge in Edinburgh, where he became immensely popular, until he published a pamphlet which brought about his undoing. His mind gave way towards the end of his life, which was terminated by an attack of haemorrhage. It is strange to pass from this obscene impostor to the illustrious master of *color che sanno* in surgery. It is half a century ago since Lister was appointed to the Chair of Surgery in Glasgow. The *Glasgow Herald* of January 31st, 1860, in a passage which has already been quoted in the JOURNAL, announces the appointment of "Mr. Lister of Edinburgh to the office of professor of surgery in the University of Glasgow, vacant by the death of Dr. Lawrie." While admitting, "as far as we have heard," that "Mr. Lister is a gentleman qualified in every respect for the important office to which he has been nominated," the *Herald* evidently thinks that a Glasgow surgeon should have been chosen. Apparently it was all the fault of an over-zealous advocate: "The claims of our local men have been ignored, we suspect, from the preposterous plan which Mr. Dalglish followed in his well-meant attempt to bring their merits before the Home Secretary. We cannot regret that our impulsive representative has been snubbed, although we may regret that the office has gone past the door of some able Glasgow practitioner We never doubted that Mr. Dalglish honestly and disinterestedly desired to find the best man; but the plan he took was a singularly injudicious one, and he must now be satisfied that the Government patronage, especially when it concerns with university appointments, is not to be regulated according to the principles of universal suffrage." Poor Mr. Dalglish. He meant well, but he was snubbed, and the Glasgow paper was evidently not sorry that such a misadventure should have befallen him. Assuredly we entirely agree that "universal suffrage," whatever advantage it may have politically, is not a satisfactory means of choosing a professor, or estimating scientific merit. The writer goes on to say: "What Mr. Lister may achieve as a lecturer we have yet to learn." Well, we have no doubt that the *Glasgow Herald* has learnt by this time; certainly the world has learnt the name of Lister as marking not only the beginning of scientific surgery, but an era in the history of mankind. And Glasgow can never forget that it was in the wards of its Royal Infirmary that his work was begun.

LOCAL ANAESTHETICS IN DENTAL SURGERY.

IN the course of a recent action in the Bolton County Court a point of interest in dental surgery arose, and on a connected subject the judge delivered a dictum of a distinctly remarkable kind on the sterilization of dental instruments. The point of interest was, What precautions should be, and are, usually adopted by careful and well-trained dentists when about to extract teeth under local anaesthesia? One set of witnesses claimed that the gum should be carefully prepared, and all instruments employed properly sterilized. The other set maintained that neither the preparation of the gum nor sterilization of the instruments was either necessary or usual. The second of these two statements represents a condition of affairs so totally different from that which prevails in general surgery that its accuracy seemed initially improbable. Nevertheless, in view of the very confident manner in which it was put forward, it seemed worth while to investigate the point and ascertain what, as a matter of fact, are the views and actual practice of leading representatives of the profession of dentistry. We find that the established practice among them is to endeavour to secure by rubbing and swabbing with 1 in 40 carbolic acid solution, or some equivalent antiseptic, freedom of the whole area from germs, and in addition to ensure absolute sterility at the point at which the needle is to enter by placing thereon a minute drop of pure carbolic acid. They also carefully cleanse their hands and take care that the solution to be injected is sterile, and that the needle to be employed is sterile likewise. Some even go so far as never to use an injecting needle twice. They hold that these practices are not only desirable, but absolutely necessary, if the patient is to be secured from the risk of a suppurating gum. Hence, as we expected, the witnesses for the defence in this case were entirely wrong, and the witnesses for the plaintiff right. As for the judicial dictum which has been mentioned, a reference to it is only worth making because, in view of the position of its utterer, that dictum is not unlikely to be taken in the locality as worthy of credence and representative of the real facts. His Honour stated that, as the defendant

had placed his instruments in hot water the night before the operation, and to that water had added five drops of carbolic acid, his instruments could be regarded as sterilized, despite the fact that they were subsequently placed and remained throughout the night in an unsterilized container. We can only state that His Honour's views on the subject of sterilization are entirely erroneous, and that he did not betray on this occasion the acumen which doubtless habitually characterizes his utterances. Instruments might be submitted to treatment of this sort until the end of time without becoming sterilized, and, even if they were sterilized in some more effective fashion, they would become non-sterile so soon as placed in any non-sterile container. Moreover, if such container were one habitually used for the reception of equally uncleanly instruments, these instruments which His Honour regarded as sterilized would not only be non-sterile, but probably positively dangerous. So far as our acquaintance with dental surgeons and dental hospitals goes, we believe that without exception these dental surgeons would refuse to use such instruments, and cannot understand how any properly-trained dentist can so disregard his own interests and those of his patients as to treat sterilization in the light-hearted fashion indicated.

DR. EDWARD CHARLTON IN SHETLAND.

THE third part of vol. iii of the *Old-Lore Miscellany of Orkney, Shetland, Caithness, and Sutherland*, published in July last, contains the opening chapter of a very interesting account of "A Visit to Shetland in 1832," which is made up of extracts taken from a journal kept by the late Dr. Edward Charlton, D.C.L., of Newcastle-on-Tyne, during his first visit to the North. In those days a voyage to the Shetlands was not so quickly or easily accomplished as it is now, and Charlton evidently regarded his journey as a somewhat unusual experience, for he speaks several times of the "feelings of enterprise" and "of awe" which overpowered him as he drew near his destination. Though but a medical student, at the end of his first year's study, Charlton was apparently the nearest approach to a doctor on board, since we find him attending a forecastle passenger who had fallen ill during the voyage. How passengers in that part of the boat fared in the case of illness it is impossible to conjecture, if they were as overcrowded as were the occupants of the main cabin of the *Magnus Troil*, which, measuring "about 12 ft. by 8 ft., had to contain as constant residents not less than nine gentlemen, and at dinner, ladies and all, we mustered twenty-one." It was on July 11th, 1832, after a voyage of four days, that Dr. Charlton got his first view of the inhabitants of those wild regions he had come so far to see. The boat was in Sumburgh Roust, when, as he tells us, "on a sudden, as I was leaning over the bow, two yawls full of strange-looking mortals broke through the mist. . . . They were Shetland fishermen, the first I had ever seen, and I shall never forget the impression their strange garb made upon me. Dressed in their skin coats and breeches, with their nether limbs encased in high boots, they rather resembled the pictures we have seen of some of the Esquimaux tribes, though, having since had an opportunity of comparing these strange garments, I must confess those of Shetland to be decidedly inferior in point of manufacture. However, the long fair hair of the Shetlanders, escaping in coils down upon their shoulders from beneath their large pendent caps of variegated worsted, certainly gave them a more picturesque appearance than the inhabitants of a still more northern clime. . . . The rapid glance I caught of the whole, as they burst suddenly through the fog and were as quickly reinvested in its heavy canopy, imparted an air of romance exceedingly in accordance with my feelings of enterprise." But the writer's natural desire to explore these "far northerly" regions was not immediately satisfied, for the inhabitants, "being in the utmost terror of the cholera," put the *Magnus Troil* and all her passengers into quarantine, where for the present we must be content to leave them. The author of this interesting diary lived to visit many other countries, "but with none," he tells us, "excepting, perhaps, Norway, have I entered with that feeling of awe, if I may so term it, which impressed me when entering the harbour of Bressey Sound on July 11th, 1832." Interesting as the contents of the journal are in themselves, they are still more so when one remembers that they are the youthful impressions of one who later on became widely known and respected as Dr. Edward Charlton. It may not be out of place to recall here some particulars of his life. Born in 1814, the second son of Mr. Charlton, of Hesleyside, in Northumberland, and the worthy descendant of an ancient Catholic family, Edward Charlton was educated at St. Cuthbert's College, Ushaw, Durham, in the university of which city he was afterwards Professor of Medicine. His life was passed in the part of England from which his family had sprung. He became senior physician to the Newcastle Infirmary, and took a leading part in the foundation of the Newcastle College of Medicine, where he was both President and Lecturer on Medicine from the date of its opening in 1851 till his death twenty-three years later. But Charlton enjoyed a more than local reputation. A keen antiquarian, his researches in Scandinavian lore earned for him the honour of election as member of the Royal Swedish Academy of Medicine in Stockholm, the Medical Society of Christiania, and other learned societies of Europe; and many of the papers he wrote on the subject of his favourite hobby received considerable attention both at home and abroad. But it is his long and close connexion with the British Medical Association that forms Dr. Charlton's chief claim upon the attention of our readers. For many years he was an ardent supporter of the Association, at the thirteenth annual meeting of which, held at Sheffield in 1845, he delivered the retrospective address on Medicine. When elected President in 1870, four years before his death, he discharged his duties so admirably that he was formally complimented at the close of the meetings. Dr. Charlton died suddenly at Newcastle on May 14th, 1874, from "suppressed gout." The universal esteem and affection gained by this "noble representative of an English gentleman" may be gauged by the fact that his funeral was attended by the medical and surgical staff of the Newcastle Infirmary, several officials of Durham University, and Lecturers of the Newcastle College of Medicine, the past and present students of the college, and the dead man's professional colleagues, who, attired in their academic robes, formed a procession which walked from the infirmary to the Catholic Cathedral, where the Requiem was sung.

GRANULAR PHARYNGITIS IN WOMEN.

IN the report of the Section of Otology, which appears elsewhere, there is a paper by Mr. Mark Hovell which, though primarily addressed to otologists is of much general interest. The central topic of Mr. Hovell's discourse is the connexion between middle-ear catarrh and irritation of mucous membrane

anywhere in the body; but the point on which he lays most stress is the frequent but commonly unrecognized relation between granular pharyngitis in women and abnormal conditions of the vagina or uterus. This is by no means the first time Mr. Hovell has had something to say on the subject; and if so far otologists have been indisposed to treat his observations with the consideration they deserve, that fact is hardly likely to dissuade the medical profession as a whole from paying them due attention. General practitioners have occasion every day of their lives to realize that irritation of one part of the gastro-intestinal canal tends to make itself apparent in distant regions, and possibly they will have less difficulty than otologists in conceiving that sometimes an unhealthy condition of the utero-vaginal mucous membrane may affect allied structures elsewhere. Since Mr. Hovell first directed attention to the subject, more striking evidence in support of his view has accumulated than he at first brought forward. On the present occasion he was able to quote several cases of pharyngeal troubles which, though they had proved resistant to prolonged treatment by throat specialists, yet vanished with the gynaecological troubles underlying them. For details of these cases we refer readers to the paper itself; here we merely point out that, when discussing the paper, the President of the Section (Dr. Edward Law) referred to cases of ear disorder in which he had found the gynaecologist of the greatest assistance. Here, then, among the otologists themselves is a notable adherent to Mr. Hovell's views. Mr. Hovell, we believe, holds that gynaecological troubles of a minor order are a much commoner source of ill-health in young unmarried women than is generally realized, and finds ground for his belief in the number of instances in which advice to consult a gynaecologist has been followed by the happiest results, and the reception by him of letters from the patients or their parents, gratefully acknowledging the counsel given them. This is testimony to the value of gynaecology, which, coming from a medical man in no wise connected with that branch of medicine, is distinctly striking. The final verdict on both points, however, must come from the general body of the profession, and more especially from family doctors, for they alone are, in most cases, the real judges of the final outcome of specialist treatment.

REPRESENTATION OF THE UNIVERSITY OF LONDON IN PARLIAMENT.

WE understand that Sir Victor Horsley has consented to stand in the forthcoming election as a candidate for the representation of the University of London. At a recent meeting of the Executive of the Liberal Association, Sir Victor Horsley was selected for nomination to a meeting of the Association, to be held on Monday next, and is being supported by a large number of graduates.

WE regret to state that some of the buildings of the University of Toulouse have been burnt down. Especially deplorable is the destruction of the library, among the contents of which were richly illuminated mediaeval manuscripts, some unique anatomical plates, and a number of medical works which it will be impossible to replace. The library contained 60,000 volumes, besides collections of theses, prints, etc. Fortunately some of the archives and the registers of students have been saved. The library was insured for £20,000. The buildings had cost £36,000.

ON October 29th a bust of the famous clinician Hermann Nothnagel was unveiled with due rites and ceremonies in the great hall of the University of Vienna. An address was delivered on the occasion by his oldest pupil, Professor von Jacksch, of Prague.

WE regret to announce the death of Mr. Mitchell Henry, F.R.C.S., formerly surgeon to Middlesex Hospital. He was born in 1826, educated at University College, London, admitted a Member of the Royal College of Surgeons in 1847, and a Fellow in 1854. He gave up the practice of his profession in 1862, and in 1871 he was elected member of Parliament for County Galway. From 1885 to 1886 he sat as Liberal member for the Blackfriars Division of Glasgow. On the split of the party over Mr. Gladstone's Home Rule Bill, Mr. Mitchell Henry became a Liberal Unionist and failed to secure re-election.

Medical Notes in Parliament.

[FROM OUR LOBBY CORRESPONDENT.]

The House of Lords was active last week, while the Commons were not sitting, in making suggestions for its own reform. On Thursday Lord Rosebery brought forward his proposals for the best means of reforming the existing organization of the House of Lords so as to constitute a strong and efficient second Chamber. The first resolution affirming that in future the House shall consist of Lords of Parliament (*a*) chosen by the whole body of hereditary peers from among themselves, and by nomination by the Crown; (*b*) sitting by virtue of office and qualifications held by them; and (*c*) chosen from outside was agreed to after a long discussion in which Lords Curzon of Kedleston, Selborne, Newton, Lansdowne, Crewe, and others took part. Lord Crewe declared that if a division was taken he should walk out, and so the resolution was accepted without any voting, and the second resolution, dealing with the tenure of Lords of Parliament, was withdrawn by Lord Rosebery as containing too much detail. After this the House adjourned.

The Dissolution.—On Friday in last week both Houses met to hear the statements of the Government as regards the continuance of the session. The Prime Minister announced to a crowded House of Commons that he intended to proceed with the essential parts of the Budget, namely, the tea duties and the income tax, together with the provisions for the Sinking Fund. The proceedings would be regulated by a procedure resolution, and in addition it would be necessary to pass a supplementary estimate for half a million to meet the cost of the removal of the pauper disqualification from old age pensioners. The Expiring Laws Continuance Bill would have to be passed, but all other contentious business would be dropped. Mr. Asquith then stated that the Government had advised the King to bring Parliament to an end, after the foregoing business had been transacted. The Veto policy of the Government had no chance of being accepted by the Lords, and the time had come when "this controversy, which obstructs the whole path of progressive legislation, shall be sent for final arbitrament to the national tribunal." The date of the Dissolution would be the 28th inst. Mr. Balfour, as Leader of the Opposition, followed in a strongly critical speech, and then the members left the Chamber in large numbers and the remainder of the debate was conducted in a relatively small house. Before the motion for adjournment was carried Lord Castlereagh moved an amendment in favour of giving

further facilities to the Parliamentary Franchise (Women) Bill. Mr. Asquith, in answer, said he would state next week what were the views of the Government as to granting facilities in the next Parliament. The amendment was then rejected by 199 votes to 52, and the House adjourned shortly afterwards. In the House of Lords the announcement of the dissolution was made by Lord Crewe to a great assembly of Peers. The statement was received in silence, and Lord Lansdowne was greeted with cheers when he declared that he had never heard of a Parliamentary manœuvre carried out with greater cynicism than that which they had just listened to. Lord Balfour of Burleigh called attention to the position of the Parliament Bill, and Lord Crewe said the advice to the Crown had been given on the assumption that their lordships could not accept the Parliament Bill as it stood. If this was not so, the whole subject would be open for reconsideration. The House rose shortly afterwards.

The Parliament Bill.—The House of Lords presented an animated appearance on Monday. All the benches on both sides were filled by Peers, and the galleries were crowded with spectators, while a large number of members of the Commons House crowded at the Bar. Lord Crewe, in moving the second reading of the Parliament Bill, recalled the rejections and mutilations of bills which had occurred since 1906, and said this bill proposed to get rid of this state of things by limiting the powers of the Upper House, while allowing sufficient delay and time for revision, so as to prevent hurried and ill considered legislation. Lord Lansdowne followed, and was not satisfied with the two years' power of delay and revision, and moved the adjournment of the debate till Wednesday, in order that he might bring before the House counter-proposals, that they would not be allowed to add as amendments to the bill, since they had to take it practically without amendment. A spirited discussion followed, in which Lord Rosebery took a prominent part, and finally the motion was agreed to, and Lord Lansdowne read his proposed resolutions—namely, that it was desirable that provision should be made for settling differences which might arise between the House of Commons and the House of Lords reconstituted and reduced in numbers; that as to bills other than money bills, such provisions should be on the following lines: If a difference arose between the two Houses with regard to bills in two successive sessions and within an interval of not less than one year, and such difference could not be adjusted, it should be settled by a joint sitting, provided that if the difference related to a matter of great gravity it should not be referred to a joint sitting, but submitted for decision to the electors by referendum; that as to money bills the Lords were prepared to forego their constitutional right to reject or amend bills which were purely financial in character, provided that effectual provision was made against tacking, and provided that if any question arose the matter should be referred to a joint committee of both Houses presided over by the Speaker, who should have a casting vote only; and if the committee held that the bill was not purely financial it should be dealt with in a joint sitting of the two Houses.

The House then adjourned at 6 45. On Wednesday the Lord Lansdowne moved that the House go into Committee on his resolutions, and this motion gave rise to a full-dress debate which lasted till half-past ten and was then adjourned to Thursday. Lord Crewe, Lord St. Aldwyn, the two Archbishops, Lord Carrington, Lord Ridley, Lord Macdonnell and others took part in a very interesting and animated discussion.

Progress of Legislation.—The Expiring Laws Continuance Bill was read a third time and passed in the Commons on Tuesday, and was read a first time in the Lords on the same day. The Consolidated Fund (Appropriation) (No. 2) Bill was also passed and read a first time in the Lords. The new Finance Bill was read a second time in the Commons without any discussion, as the Opposition declined to take any part in the proceedings at this stage. On Wednesday the Commons held a comparatively short sitting, but discussed the Finance Bill and had one division on the tea duty. The Finance Bill passed through Committee after two clauses (7 and 9) had been struck out at the instance of the Government. The bill was afterwards read a third time. It was read a first time in the Lords on the same night. The Education (Choice of Employment) Bill was also read a third time and passed, while a second reading was given to the Consolidated Fund (No. 2) Bill and to the Expiring Laws Continuance Bill in the Upper Chamber.

The Rat Plague in East Anglia.—In the Lords on Tuesday, after the Education (Choice of Employment) Bill had been discussed and passed, Lord Lamington asked whether, for the more effective destruction of rats in the plague-infected districts of East Anglia, the Local Government Board as the chief authority, would not itself take steps for their extermination or else induce the local authorities concerned to adopt concerted measures under expert scientific guidance. He said that there seemed to be some lack of co-ordination on the part of the various authorities, although the recent regulations issued by the Board of Trade to some degree removed his objections. He asked what methods the local authorities and the Local Government Board were taking to get rid of the rats. Lord Allendale said that he need not go into all the details of the procedure adopted by the Local Government Board. The noble lord seemed to suggest that the Board might turn rat-catchers, or, at any rate, should superintend the extermination or destruction of the rats. While the Board was of opinion that the campaign should be of a local character, it was fully alive to its responsibilities in the matter of public health, and had not been slow to press on the local authorities concerned the necessity for adopting common measures. It had from the outset provided the local authorities with guidance and advice. The matter was first brought to the notice of the Board on October 3rd, when 4 cases of suspected plague were reported. The medical inspector of the Board was instructed on the same day to visit the locality. On the eve of October 8th a dead rat was sent to the Board for examination, and was pronounced on October 12th to have had the plague. The inspector proceeded at once to make a scientific local investigation as to the extent of the disease and to give advice to the sanitary inspectors of the districts concerned as to the action to be taken. On October 10th the Board issued an order as to the destruction of rats, imposing the duty on the sanitary authorities and providing for the necessary expenditure of money. They had taken other steps also, and arrangements had been made for a special staff from the Lister Institute to go to Suffolk to make examination on a large scale, and to ascertain the kind of rats affected and their parasites. This work had been undertaken under the direction of Dr. Martin, a director of the Lister Institute, whose investigations into the plague were well known. Up to yesterday only six districts were known to have rat plague in East Suffolk, one in West Suffolk, and one in Essex. The Board considered that the campaign against rats was a local responsibility, and he saw no reason why this particular work should be undertaken by the State. The noble lord would not contend that the State was better equipped for such experiments, but, at the same time, any advice that the Board could give was at the disposal of the local authorities. The Local Government Board and the Board of Agriculture were working in co-operation, and were in touch with the local authorities and would continue to give such advice as was necessary.

England and Wales.

[FROM OUR SPECIAL CORRESPONDENTS.]

LONDON.

EARLY TREATMENT OF INCIPIENT INSANITY.

LITTLE more than a year ago the London County Council considered a proposal by its Asylums Committee that parliamentary powers be sought for the establishment of four receiving houses for alleged lunatics. On behalf of the Finance Committee an amendment was moved limiting the scheme to the establishment of one receiving house only, as an experiment, and this amendment was carried despite the protests of those who argued that one receiving house for the whole of London would be wholly inadequate.[1]

This week—on November 22nd, 1910—the Parliamentary Committee stated that it had experienced considerable difficulty in giving effect to the Council's instruction owing to doubts which had arisen in regard to the exact nature and extent of the scheme for which it was desired to obtain powers. Prolonged negotiations had taken place with the Asylums and Finance Committees as to the form the bill should take, and although agreement had been arrived at on the larger issues involved, the Asylums Committee had not yet considered the bill in its final form. However, it would be too late to make any progress with a private bill this session, and in the circumstances it did not appear to the Parliamentary Committee to be of any use proceeding further. The Chairman of the Asylums Committee concurred in this view. The Council's instruction only related to the session of 1910; if the Asylums Committee desired to proceed further in the session of 1911, it remained with that committee to submit the necessary recommendation.

This report was submitted without any recommendation attached, and consequently could not be discussed. Mr. W. C. Johnson, who wished to speak on it, opposed the whole report in order to secure an opportunity for debate next week.

ADMINISTRATION OF L.C.C. ASYLUMS.

The Finance Committee reported, as required by law, on the financial aspects of the Asylums Committee's annual report.

Mr. Jephson remarked that the report of the Asylums Committee reflected the greatest credit on the administration of that department of the Council's service. It was a striking tribute to it that amongst such a large number of unfortunate people they had never yet heard of any scandal or cases of ill-treatment.

Mr. Hayes Fisher, Chairman of the Finance Committee, agreed that the Council was much indebted to the Asylums Committee and former committees for attending so diligently to the disagreeable tasks which fell to the lot of the members. One or two members of the Council had made it practically their life-work. There had been no complaint whatever on the part of those concerned, and the whole record of asylums management was a great credit to the London County Council and to those who served year by year on the committee.

The report was received.

ADJUSTMENT OF CORONERS' DISTRICTS.

The Public Control Committee reported that one effect of the adjustment of the coroners' districts in the County of London, agreed to by the Council on October 11th,[2] would be to necessitate extensive alterations in the areas of the southern and south-western districts, the Council having decided to make the boundaries of the coroners' districts coincide with the boundaries of metropolitan boroughs. Since its previous report the committee had been advised that serious difficulties in regard to compensation, etc., might be encountered in taking steps to carry out such alterations in the two districts mentioned. The committee recommended, therefore, that the proposed alteration of boundaries should be confined at present to those cases in which the boundaries did not coincide, owing to alterations of parish areas made under the Local Government Act, 1899.

The resolution of October 11th was accordingly rescinded, and the Council agreed to limit the alterations to those proposed by the committee.

EXPECTORATION ON TRAMCARS.

In reply to a question as to the extent to which the Council's by-laws against spitting on tramcars were enforced, Mr. White, the Chairman of the Highways Committee, said that a few convictions had been obtained and 100 or so of cautionary letters had been sent. It was extremely difficult for the conductors to deal with this matter, and he wished something could be done to persuade passengers to help; then, no doubt, it would be possible to do a great deal to check this objectionable habit.

EDUCATION COMMITTEE.

Administration of the Provision of Meals Act.

The Education Committee of the London County Council on November 23rd had under consideration a long report by the Children's Care Subcommittee reviewing the system by which necessitous children were served with meals. The conclusions the subcommittee came to were that more suitable dining centres were required, and that the use of school halls—the Board of Education's objection notwithstanding—was preferable to present methods, which consisted of attendance by the children (*a*) at buildings hired or lent free of charge; (*b*) at coffee-houses, and (*c*) at privately controlled dining centres. By way of meeting various objections which had been urged by teachers and others to the use of school halls, the subcommittee stated that all the children could leave by one o'clock, thus allowing ample time for ventilation; the spilling of food was a trivial matter. All that was necessary was that the helpers should gather up all greasy substances immediately after the meal, and that floors should be washed fortnightly instead of every three weeks. The principal difficulty would be the provision of accommodation for washing up, and to meet this the subcommittee recommended that annexes should be built. The ultimate cost would be £20,000. The subcommittee found itself obliged to admit that the four years' contract entered into with the Alexandra Trust for the supply of meals was ill-advised from the Council's point of view, and stated that the ideal method would be to establish a kitchen and dining-hall at each school, or to group two or three schools with a dining-hall at the most convenient centre. For the present, however, no change could be made.

At the request of several members the debate on the report was adjourned.

Cleansing of Verminous Children.

The subcommittee also reported as to the cleansing of children infested with vermin, recommending that, as the number of such children would probably diminish in the next few years, arrangements should be made to use borough council cleansing stations rather than establish new stations. Thirteen borough councils were willing to undertake the work, and agreements for one year should be entered into. For the remaining districts the County Council would have to make its own arrangements. Any scheme for cleansing the bodies and clothing of children would be ineffective unless the homes were attended to at the same time, and the subcommittee was informed that the borough medical officers of health were willing to assist in this matter. It was estimated that about 20,000 children required treatment, and the agreement with the borough councils would provide for 12,000 of them. Three visits to the cleansing station would be necessary in each case, and the borough councils would undertake the work for a payment of 2s. a head. Where existing buildings could not be adapted, only temporary structures would be erected to serve as the Council's own cleansing

[1] BRITISH MEDICAL JOURNAL, July 24th, 1909, p. 234, and October 16th, 1909, p. 1184.
[2] Ibid., October 15th, p. 1180.

stations. The boroughs agreeing to undertake cleansing were Battersea, Bermondsey, Camberwell, Greenwich, Hackney, Hampstead, Poplar, Marylebone, St. Pancras, Southwark, Stoke Newington, Woolwich, and Westminster. The City Corporation offered to do the work without charge.

The proposals of the subcommittee were approved.

RECOVERY OF COST OF DENTAL TREATMENT.

The report with reference to the recovery from parents of the cost of dental treatment, withdrawn last week by the subcommittee, as reported in the last issue of the BRITISH MEDICAL JOURNAL, page 1651, was brought forward again, the subcommittee recommending that, instead of fixed charges, each case should be considered on its merits, provided that some charge was made in all cases, and that in no instance should the amount paid by the parent exceed 1s. As in the case of medical treatment, legal proceedings would not be taken where the local care committee was of opinion that the parents could not pay.

The report was approved.

APPOINTMENTS TO THE MEDICAL SERVICE.

In connexion with the reorganization of the medical inspection staff agreed upon by the Council on November 1st,[1] the committee approved the appointment of Mr. A. H. Brinckner, B.A., M.B., D.P.H., and Miss A. C. Gowdey, M.B., two part-time officers whose engagements had just lapsed, as full-time assistant medical officers (education) at commencing salaries of £500 a year.

NUMERICAL RETURN OF MEDICAL INSPECTIONS.

In accordance with a promise made at a recent meeting of the committee, the first of a series of weekly returns as to the number of children undergoing medical inspection was presented. It was as follows: Number of school doctors engaged 71, schools inspected 73, children inspected 5,521, number found to require treatment (all ailments) 2,309, number of those for whom treatment is available under the Council's scheme 1,558.

MANCHESTER AND DISTRICT.

MANCHESTER UNIVERSITY.

A MEETING of the Court of the Manchester University was held on November 16th, at which the Pro-Vice-Chancellor, Professor H. B. Dixon, presided, in the absence of the Vice-Chancellor. Sir F. Forbes Adam, Chairman of the Council, moved a resolution expressing the deep sorrow of the Court at the death of Lord Spencer, at one time Chancellor of the University, and recording its sense of the high value of the services which he had rendered to the university for many years. This was seconded by Mr. A. Haworth, as Representative of Convocation, and passed. A similar resolution was passed referring to the late Sir William Agnew, who had been a warm friend of Owens College, and had continued to be a generous supporter of the university. Only recently Sir William Agnew had come forward at a critical time, and enabled the Council to establish the Chair of Architecture. Sir F. Forbes Adam went on to speak of the progress of the university, and said that the number of students had increased during the year from 1,583 to 1,657, and he was glad to say that the number of those who had not passed the matriculation was much smaller. Allusion was next made to the founding of the Chair of Economic History, which was the first chair in this subject instituted at an English university. The Faculty of Commerce had now been successfully carried on for six years, and had largely depended on subscriptions promised for a period of years. That fund now needed replenishment, and the Chamber of Commerce had agreed to ask its treasurer to receive any subscriptions that might be sent in. It was hoped that the Faculty would soon be placed on a permanent basis. Early in the present year the council decided to proceed with the erection of new botanical laboratories in which accommodation could be provided for the new Chair of Cryptogamic Botany. The cost of the extension was estimated at £11,456, and towards this a generous donation of £1,000 had been received. Part of the cost would be met out of the Barker Fund from which the Chair of Cryptogamic Botany was provided, but there would be something like £7,600 still to be provided for the new building; this would enable several rooms to be set at liberty for the use of the Department of Geology. Additional buildings would also be needed for the Department of Electrical Engineering, owing to the large number of advanced students who come from all parts of the world to do research work under Professor Rutherford in the physical laboratories.

Dr. A. W. Ward, Master of Peterhouse, Cambridge, moved the adoption of the report presented, and both he and the Bishop of Salford expressed gratification that in a great commercial centre like Manchester the arts departments of the university fairly balanced those devoted to science.

HOPE HOSPITAL.

At a meeting of the Finance Committee of the Salford Board of Guardians, it was announced that forty-seven applications had been received for the post of medical superintendent of Hope Hospital. A previous appointment to this post had failed to receive the sanction of the Local Government Board, and after several ineffectual attempts to persuade the Board, the guardians had been compelled again to advertise. Among the conditions attached, it was stipulated that the candidates must be married men, and must have had previous administrative experience in a Poor Law or other hospital. On the previous occasion the guardians had not refused to consider applications from unmarried men who promised to get married soon, and several of the present candidates intimated in their letters of application that they were prepared to get married in time to undertake the appointment if their applications were successful. When the matter came before the guardians several members expressed the opinion that such a promise ought to be taken as sufficient, but others of the guardians thought they ought to keep strictly to the terms of the advertisement, and not to lay themselves open to having their appointment again refused by the Local Government Board. It was stated that at least one medical man, well qualified in other ways, had refrained from applying because he was at present unmarried, though he intended to get married shortly. The Clerk said he understood that what the Local Government Board required was that the medical superintendent should be married when he took up the appointment; and it was then resolved to take the applications as they appeared on the list, the names of three unmarried candidates who gave no indications of their intentions being at once struck off. Six of the 47 candidates, all married men, were chosen to appear before the board, and on November 18th the guardians met to make the appointment. After the first vote it was found that three of the candidates had received an equal number of votes, and one of the guardians, who had refrained from voting as a protest against the refusal of the Local Government Board to sanction the former appointment, suggested that the board should be allowed to make the appointment. In the end, however, one of the three names was struck off, and by a majority the guardians appointed Dr. Austin of Leicester. In his letter of application Dr. Austin stated that he was married and, as required by the advertisement, had had administrative experience at Kensington Infirmary, where he had been for two years, during which time he had charge when the medical superintendent was absent. He had also been resident obstetric officer at St. Mary's Hospital, Paddington, and house-physician at Leicester Infirmary and Fever House. He was now district medical officer to the Lutterworth Union and a public vaccinator. Apparently all the terms of the advertisement have now been carried out, and it is understood that if the Local Government Board ratifies the appointment Dr. Austin will take up his duties at the beginning of the new year.

[1] BRITISH MEDICAL JOURNAL, November 5th, page 1458.

BRISTOL.

The New Chemical and Physiological Laboratories.

The ceremony of the official opening of the new Physiological and Chemical Laboratories took place on November 14th, in the presence of a large number of Professors, City Councillors, and invited guests. The proceedings began with prayers offered by the Bishop of Bristol, and the singing of two hymns, in which all present were requested to join. Afterwards the Pro-Chancellor, Lord Winterstoke, addressed a few words on the advantages that would result from the uses of the new laboratories, and was followed by Dr. Herbert Warren, President of Magdalen College, Oxford. The company then divided into two parties, the Pro-Chancellor and certain invited guests passing down the new wing to the inside of the entrance under the tower, while the Chairman of the Council, Mr. Lewis Fry, with the Lord Mayor, City officials, and other guests went to the outside. Posted outside the gate was a guard of honour of the Univerity Officers' Training Corps, which presented arms on the approach of the procession. Mr. Fry, with an ivory mallet, gave three knocks at the door to announce the presence of those seeking admission; this was answered by Lord Winterstoke, who opened the door and announced the new wing open and ready for inspection. Unfortunately, the weather was most unpropitious, and few remained to make the tour of the buildings, but as there was to be a reception in the evening the opportunity of seeing the splendid laboratories was, no doubt, deferred by many till then. The architect of the building was Mr. G. Oatley, of Bristol, and the builders Messrs. Cowlin and Sons. The original estimate for the whole block was £30,000, but this has probably been exceeded.

The reception in the evening of the same day was the most successful entertainment of the kind that has ever been held in the university buildings, not only for the better convenience for getting about, but also for the interesting exhibits that were shown in all the departments. It would take too long to describe all these in detail, and only those that were connected with the two newly opened ones will be mentioned. First, as regards the rooms.

Physiological Department.

Twenty-one rooms are devoted to teaching, but this includes the necessary store-rooms and preparation rooms. In the basement are situated the galvanometer room, a cold store room, an incubator room, and a constant temperature room. In the first of these will be fitted an electro-cardiogram, by which heart records for the medical institutions can be taken. This apparatus will be the first to be erected in the kingdom, and will be mounted on concrete pillars embedded on the rock. On the ground floor is situated the lecture theatre, to hold 120 to 160. The lecturer's table is constructed in three parts, each being capable of being removed to the back part of the room if not required, all the connexions for gas, water, electricity, and drainage being flexible and removable, and brought to the lecture table in channels under the floor. On the table are fitted lights on the principle of footlights in a theatre, so that the specimens are brilliantly illuminated, and the eyes of the audience not dazzled. The lantern is fixed on the lecturer's table, so as to be under his control, and the screen is placed at the back of the theatre, and can be tilted to any required angle. For the demonstration of diagrams an original design has been introduced—a set of angles or gallows is fixed in a corner, each supporting a sheet of strong canvas. On the canvas the diagrams are fixed, and when no longer required can be rotated, thereby exposing the one behind. For the efficient illumination of these an arc lamp is provided. The galvanometer is placed on a stone shelf at the back of the room, the screen being placed in front of it. All the electrical fittings are under the control of the lecturer. On this floor are situated the private room of the professor, the museum, and a store-room.

On the first floor are situated the optical room, the laboratory of chemical physiology with its preparation room and store-room. The optical room will be devoted to the study of special senses, gas analysis, photography, and photomicrography, and as a balance room for the laboratory of chemical physiology. On the second floor is the histology laboratory, the experimental physiology laboratory with the preparation room, assistants' room and demonstration rooms, the students' galvanometer room, and the professor's laboratory. The histology laboratory will give accommodation for sixty students at present, but more room can be had by using the gallery. A north light is obtained by a "weavershed" glass roof, though the general lighting is by electricity, inverted gas mantles being used for the microscopes. In the professor's laboratory the experimental mains provide alternating currents at 105 and 210 volts pressure, a direct current at 72 volts, and three circuits supplying current at any special voltage that may be required. It will be seen from the above rather brief account that the physiological department has been fitted up with the most modern requirements; indeed, it is doubtful whether a more fully equipped laboratory exists in the kingdom. Professor Stanley Kent has had the opportunity of inspecting a large number of similar buildings, and from his experience has evolved as complete a set of rooms for the teaching of physiology as can be found anywhere.

Chemical Department.

This department, which lies to the left of the new entrance of the university in Woodland Road, consists of thirty rooms, with accommodation for 200 students. In the basement is a large store-room for the stock of apparatus and chemicals, connected by a lift with the rest of the department, a gas analysis room, an analytical laboratory, a metallurgical laboratory fitted with draught hoods, a battery room, and heating chambers and plant for the supply of hot water. The special point about the battery room is the fact that the whole of the supply of experimental current is here concentrated in one place. At present eighty-six cells have been installed, each of about 300 ampère hours capacity. From the distribution board in the Physico-Chemical Laboratory overhead the current is distributed to the departments of science and medical faculties, and for the lantern in the large hall. On the ground floor is the senior lecture theatre with its preparation room, a balance room, and the organic laboratory. A peculiar feature of this room is a shower bath for use in the event of a student's clothes catching fire. Between this room and the Physico-Chemical Laboratory is the professor's private room. This latter laboratory is specially fitted with an experimental current and arrangements for continuous experiments without the fear of fire. In the preparation room are the switches for the ventilating fans, run on a continuous current to minimize noise. There is also a museum on this floor. On the first floor are a small lecture room and the Bio-chemical Laboratory, with balance room and stores. Here is also the main laboratory, well lighted from three sides, and capable of accommodating eighty students, a number which has already been exceeded. Each bench contains its own draught flue, gas and water, and round the room are the fume chambers, dispensaries, and steam-drying ovens for the supply of distilled water. The chemical department can afford room for over two hundred students, and the building compares favourably with others of its kind in England and on the Continent. In the small leaflet that was distributed at the reception a full description of the electrical fittings is given, and from it it will be gathered that Dr. Francis and his assistants have taken the trouble to obtain details from many laboratories both in the country and abroad, in order to get as complete a department as is possible.

Only a brief account can be given of the various exhibits that were on show at the reception. Each

department seemed to have done its best to put before the visitors whatever was new and of interest, and the large numbers of workers are to be congratulated on the success of their labours. The pathological and bacteriological department had many interesting exhibits, such as a demonstration of the latest facts on typhoid-carriers, infected food, flies as carriers of infection, etc. It would require too much space to detail them all, but special notice must be made of the projectoscope, Leitz-Edinger's apparatus showing normal and cancerous skin.

When one remembers the former small room and crowded benches of the old building and compares them with the well-lighted and spacious rooms of the new, the heartiest congratulations must be given to the professors and their assistants for the immense amount of labour that they must have taken to evolve such a fine building, which, as they proudly boast, is second to none in the world.

WEST YORKSHIRE.

POOR LAW ADMINISTRATION IN THE WEST RIDING.

MANY interesting points are dealt with in the annual report of the Local Government Board Inspector (Mr. Philip H. Bagenal) on Poor Law administration in the West Riding. The inspector states that the publication of the reports of the Poor Law Commission has not only aroused fresh public interest in the whole problem, but has had the effect of quickening the action of guardians in a more detailed examination of their administration. It appears that nearly all the workhouses have separate classification blocks for the accommodation of the sick. In the thirty-five unions in the West Riding there are only three workhouses where the sick are treated in the main block, these being Pateley Bridge (24 inmates), Sedbergh (12 inmates), and Saddleworth (58 inmates). The first two are so small as to be classed more as almshouses than workhouses. During the last ten years twelve new workhouse hospitals have been erected in the West Riding, a convincing testimony to the progress made in this particular branch of workhouse administration. Some of the workhouse hospitals, such as Sheffield, Bradford, Leeds, Halifax, Dewsbury, Wakefield, Doncaster, and Huddersfield, are as well equipped and staffed as general hospitals. The "staffing" mentioned by Mr. Bagenal is, perhaps, from a medical point of view not quite complete. The medical staff usually consists of a superintendent with one or more resident medical officers. The superintendent has to undertake the general supervision of the sick, and to be the operative surgeon and the consulting physician, and it is impossible to consider that any one individual can in all respects be as perfect as the different members of the medical and surgical staff of a general hospital. There is little doubt that the medical aspects of Poor Law hospital work could be improved by the judicious use of the special qualifications of experts in the various branches of the profession.

Scotland.

[FROM OUR SPECIAL CORRESPONDENTS.]

REGULATIONS WITH RESPECT TO PLAGUE.

THE Local Government Board for Scotland has issued an Order to the local authorities containing regulations issued by the Board in pursuance of their powers under Part IV of the Public Health (Scotland) Act, 1897.

The Order is not so elaborate as the Memorandum issued to the sanitary authorities in England (published at pp. 1636–38, BRITISH MEDICAL JOURNAL, November 19th). Referring only to previous Orders issued in 1902, the Board explains that it is advisable to issue a more stringent Order.

The Regulations as issued are:

Article I.—The local authority shall take measures to ascertain whether there is or has been recently any disease or unusual mortality among rats within their district, and if such be found to exist the local authority shall at once report the facts to the Board, and take steps to ascertain whether any of such animals are suffering from plague.

Article II.—If plague is found or suspected to exist among rats within the district, or in any neighbouring district, or in any ship lying in any harbour, river, or other water within or *ex adverso* of the district, the local authority shall at once take the necessary steps to include plague among the diseases to which the Infectious Diseases (Notification) Act, 1889, applies, and shall adopt all necessary precautions to prevent the dissemination of the disease, and for that purpose shall take measures:

(*a*) To disinfect all places and to disinfect or destroy all articles that may have been exposed to infection;
(*b*) To destroy all rats in the locality;
(*c*) To prevent their entrance into houses, ships, and other premises;
(*d*) To remove all deposits or accumulations of rubbish, refuse, manure, or other materials likely to attract such animals; and
(*e*) Generally to do everything calculated to stamp out the disease.

Article III.—If plague is not found or suspected to exist among rats as aforesaid, the local authority may take measures:

(*a*) To destroy all rats in the locality.
(*b*) To prevent their entrance into ships, houses, and other premises; and
(*c*) To remove all deposits or accumulations of rubbish, refuse, manure, or other materials likely to attract such animals.

Arrangements have been made for bacteriological examination of material from suspected cases of plague, whether (1) from the living person or the dead body; or (2) from rats suspected to be suffering from, or have died of, plague.

AN EFFECTIVE RAT POISON.

In view of the recent circulars issued by the Local Government Boards of England and Scotland relating to extermination of rats, it may be noted that a circular has just been issued by the United States Agricultural Department, recommending barium carbonate as the cheapest and most effective poison for destroying rats. In the small quantities used in poisoning rats this compound is harmless to larger animals. It has the further merit that the animals before dying usually leave the premises in search of water. The bait is prepared by mixing one part of the barium carbonate with about five parts of oatmeal and adding enough water to form a stiff paste. The chemical can also be used by spreading it on bread-and-butter. The recommendation of the United States Agricultural Department might be well worth a trial.

THE FEEDING OF SCHOOL CHILDREN IN EDINBURGH.

The Edinburgh School Board has issued a memorandum on the feeding of school children in Edinburgh under the Education Act, 1908. The matter is considered under five heads:

1. *The Board's Duty under the Act.*

(*a*) To initiate prosecutions in cases of neglect where the child's education is suffering.

(*b*) To supply food and clothing in cases of genuine destitution, where voluntary agencies are unable to deal with the matter.

As soon as it appears that there are in attendance at the schools children who are unable through lack of food or of clothing to take full advantage of the education provided, the board must consider these cases in relation to the circumstances of the parents or guardians. It is clear that it is highly desirable for the board to be in touch with all the voluntary agencies in the city, and to be assured that they are acting in unity and efficiently. The board may give temporary feeding and clothing, pending the completion of the investigation into the circumstances of the case. The board will aim at deterring the idle, the dishonest, and the unscrupulous, at organizing effectively voluntary effort so far as to relieve genuine necessity and honest poverty; only in the last result will it lay upon the rates the cost of feeding and clothing destitute children.

2. *The Conditions of the Problem in Edinburgh.*

The total number of children on the rolls of the board's schools is approximately 41,000, and in the voluntary schools 5 500; total, 46,500. The board is responsible for dealing with the problem of necessity in both cases. From the experience of the winter of 1909–10 it was found that the number of children regarded as necessitous was about 2,400. In addition there were throughout the year approximately 370 children of parents receiving outdoor relief fed at the expense of the parish council.

3. *The Proposed Organization.*

The board proposes to constitute care committees consisting of voluntary workers. For the city, as a whole, there will be a central care committee; for each school or group of schools there will be a local care committee consisting of about ten members. The latter will in poverty-stricken districts be attached to one school; in other districts to a group of schools. The primary function of the local committee is to investigate thoroughly all cases of destitution in the schools under their charge, to keep in touch with these cases continuously so as to be aware of any change of circumstances, and to make recommendations to the central care committee. The central care committee is to be composed of the members of the board, of representatives of such societies and voluntary agencies as are willing to co-operate with the board in this work, and of other influential and representative elements of the community.

4. *The Feeding Centre.*

The board has the power to provide accommodation, apparatus, equipment, and service for the preparation and supply of meals to pupils attending schools within the district. Briefly, the advantages of a well-organized cooking centre may be stated as follows:

1. The children receive some training in decorum or good manners.
2. Scientific knowledge of food values can be made use of in drawing up the bills of fare.
3. The meals are properly cooked, and the materials used are of good quality.

5. *District Social Work.*

The local care committees which carry out the work of feeding properly will find themselves in a very strong position for social work in their districts. The knowledge of the home circumstances of destitute families, and the personal and sympathetic contact with parents and children, may in the hands of the tactful and zealous worker lead to many results in social amelioration, of which efficient feeding and clothing of school children is but a small part.

VERMINOUS CHILDREN.

At a recent meeting of the Edinburgh School Board, several parents were specially summoned under Clause VI of the Education (Scotland) Act, 1908, dealing with verminous children, and empowering the Board, after due warning, to report to the Procurator-Fiscal, with a view to prosecution before the Sheriff. As this was the first instance of the kind coming before them under this Act, the board decided to give the parents another chance, but warned them that any further complaints against them would be summarily dealt with before the Sheriff.

HOUSING CONDITIONS OF LANARKSHIRE MINERS.

Mr. John T. Wilson, Medical Officer of Health for Lanarkshire, has issued an exhaustive report of 242 pages on the housing conditions of the Lanarkshire miners, for the Local Government Board, county council, and district committees. There are reckoned to be about 55 500 persons employed in mining operations in the county, of which 500 are females. The total number of houses occupied by miners is given as 20,930, which, compared with the total occupied houses of all classes, gives a percentage proportion of 36 25. In the middle ward of Lanarkshire the proportion of houses occupied by miners is one-half of the total; in the upper ward one-fourth; and in the lower ward one-sixth. These figures show the important place the mining industry occupies in the county. While many companies have built houses for their workmen, and many houses have been built and are owned by miners themselves, the majority are accommodated in houses rented from speculative builders, the number of rented houses being 12,099.

Dr. Wilson discusses the interesting problem of the single-apartment house. Ten per cent. of the houses erected in the county under the building by-laws are of this class, which in the second report of the Royal Commission on Mines is condemned. For men and families living in such circumstances the Commission considers that facilities for cleanliness are non-existent, and it is scarcely possible for miners to wash themselves completely without a breach of the common decencies of life. Dr. Wilson considers this conclusion might well be questioned, and asks consideration of the whole social conditions of the miner's life. Assuming that single-apartment houses are used only by young married couples, or by elderly couples without families, Dr. Wilson cannot see that any objections can be urged so long as the houses have suitable domestic and sanitary conveniences. On the whole, it is concluded that the miners are fairly comfortable, and matters continue to improve. An interesting comparison is drawn with the Ruhr mining district in Germany, where 300,000 miners are employed. In this district Dr. Wilson was impressed with the ground building plan, the air space round the buildings, the provision of public park, gardens, bandstand, and fountain, yet the rentals were comparatively small. He could not but admire the method under which such schemes were carefully thought out and carried through.

Ireland.

[FROM OUR SPECIAL CORRESPONDENTS.]

FUNDS OF THE ROYAL COLLEGE OF SURGEONS.

IN the Chancery Court recently judgement was given by the Master of the Rolls in the case of the Royal College of Surgeons *v.* Stoker and others. The question at issue depended on the construction of the deed of amalgamation between the Carmichael and Ledwich Medical Schools and the School of the College of Surgeons, and concerned the disposal of a sum of about £1,900 which had accumulated in the general fund. The Master of the Rolls held that under the agreement the proprietors of the Ledwich school were not entitled to further payment, but the decision was to be without prejudice to any steps that might be taken for rectifying the agreement. Professor White was held to have a definite claim on the fund, and Professor Scott and the widow of the late Professor Frazer were held to have claims under certain specified conditions.

DUBLIN UNIVERSITY BIOLOGICAL ASSOCIATION.

The opening meeting of this association was held in the debating hall of the Graduates' Memorial Buildings, Trinity College, Dublin, on Saturday evening, November 19th, when the President-elect, Mr. W. I. Wheeler delivered his inaugural address on the treatment of fractures by ancient and modern methods. Mr. Wheeler laid stress on the comparatively little progress that had been made in the treatment of fracture from the time of the ancient Egyptians until a few years ago, and later dealt in detail with the modern methods associated with the names of Lucas-Championnière and Arbuthnot Lane. The address was illustrated by lantern slides. The succeeding speakers included Mr. Arbuthnot Lane, Mr. Fullerton (Belfast), Professor James Little, and Mr. W. S. Houghton. After the meeting, the members of the association were entertained at a most enjoyable smoking concert by Mr. William Taylor.

Dublin Guardians and Pasteurized Milk.

In the issue of the Journal for October 22nd, p. 1282, reference was made to a motion which had been handed in by one of the guardians of the South Dublin Union with reference to the abolition of the use of pasteurized milk and the substitution therefor of fresh milk. Since then the guardians have met, and have determined upon the discontinuance of the pasteurized milk without waiting for the report on the deaths of children in the union which they had asked Dr. Dunne to furnish. This precipitate action is the more to be regretted as it appears from a letter addressed to the guardians by Dr. Dunne at their last meeting that previous recommendations of his, which would have ensured the provision of a pure milk supply, have been ignored. Dr. Dunne rightly insists on the responsibility which the members of the board incur in interfering with the medical treatment of the infants admitted to the union. The precedent is undoubtedly a dangerous one; and even admitting that opinions on the value of pasteurized milk are widely variant, we think that the guardians should have taken the trouble to investigate the matter thoroughly and to obtain expert opinion, instead of rushing to an unconsidered conclusion.

Belfast Medical Students' Association.

The inaugural meeting of the session was held on November 15th in the McMordie Hall of the Students' Union. The President, Dr. W. W. D. Thompson, B.C, occupied the chair, and gave an interesting address on The Country Doctor. He dealt with many of those unconscious heroes whose memory has come down to us, and serves as a spur to our higher nature. Dealing with the question of remuneration, he strongly urged newly qualified men to think of the services or colonies in preference to a country appointment in Ireland, where the salary of a dispensary doctor was that of a mechanic, and where private practice was limited and difficult.

Professor Lindsay followed with a paper on the Present-day Prospects for the Medical Student. After a clear and humorous description of many of the early troubles of the newly qualified medical man, he referred to the overcrowding that had been experienced in France, Germany, Italy, and America, and said that it did not exist in Belfast, where there were 1,000 citizens to every practitioner. This statement has not been accepted with anything like a chorus of approval, as there is an immense class of people in Belfast on the border line of poverty, such as labourers, mill-girls, and out-of-work mechanics, whose days of fee-paying capacity have been brought to an early termination by former alcoholism and extravagance. It is the unanimous experience of the general practitioner that money is harder to make and bills more slowly paid than was the case five years ago. The hospitals treat many cases quite able to pay a fair fee, and bring back day after day many minor accidents that should be sent after the first visit to their ordinary medical attendant. Overcrowding to a very serious extent is alleged to exist; and undoubtedly the number of practitioners has increased far beyond the proportion of the increase of population. At the debates of the last couple of years at the Ulster Medical Society general practitioners brought forward several resolutions designed to limit hospital abuse and to regulate the attendance of consultants and specialists. Of the graduates twice yearly sent out from the Belfast University, a very large majority luckily recognize the excess of supply over demand in Belfast, and seek the services, the colonies, or assistantships in England.

Ulster Medical Society.

The annual dinner of the Ulster Medical Society was held in the Medical Institute, Belfast, on the evening of November 17th. The Senior Vice-President, Dr. J. S. Morrow, occupied the chair, owing to the unavoidable absence of the President, Sir Peter O'Connell, from illness. About sixty Fellows and guests sat down. After dinner the Chairman gave the toast of "The King," which was loyally honoured. He next gave the "Lord Lieutenant and Prosperity to Ireland," which was responded to by the Lord Mayor of Belfast (Mr. R. J. McMordie, M.A.) in a clear and felicitous speech, telling of many of the efforts of both Lord and Lady Aberdeen, which had endeared them to all hearts in Ireland. Sir John Byers then gave "Our Guests," saying he had wished all the guests would reply, as they were delighted to welcome them individually and would be delighted to hear them. Many were associated with the profession in close and friendly ties. The toast was responded to by the Recorder of Belfast (His Honour Judge McIlroy), the Vice-Chancellor of the Queen's University, (Rev. Dr. Hamilton), and the President of the Ulster Branch of the British Medical Association (Dr. W. Calwell). Professor Sinclair proposed "Our Chairman," which was received with applause, and acknowledged by Dr. Morrow, who said that they must not part before acknowledging the many services of their Honorary Secretary, Mr. Howard Stevenson, to whose labours the success of the dinner was due. Much regret was expressed by many speakers as to the absence of Sir Peter O'Connell, and all hoped for his speedy recovery.

Some excellent singing greatly contributed to the enjoyment of the evening.

Correspondence.

NATIONAL MEDICAL SERVICE.

Sir,—I hope that you can afford me space to develop further the issues involved in the questions of sickness and invalidity insurance. Is it too much to presume that most of us now recognize that the Chancellor of the Exchequer is likely to provide for his share of the sickness cost by paying each year what is actuarially deemed an adequate premium? If not, we must consider the issues to the profession from the various possible ways in which the fund so created can be managed.

It has been suggested that a central reserve fund could be created at the Treasury. If the profession can look forward with equanimity to a large fund for the payment of medical services being held over its head by the Treasury, I fail to see what we are all so anxious about now. If the Treasury, with accumulated resources of this kind, can be relied upon to receive favourably the views of the medical profession as to their distribution, we can surely with like equanimity rely on the abstract justice of our interests being recognized now, and all the work of our central organization is so much futile log-rolling.

The second possibility is that the funds might be taken in premium by some great insurance organization. As yet the philanthropy of the insurance societies has not led them to accept premiums on any scale that does not afford both sufficient cover for the risk and working expenses, and also a margin of profit. Thus assuming that the working expenses would be equal under all schemes, this one is marked by requiring a special deduction from the fund in the name of profit. In addition, the experience of the profession with regard to the remuneration of professional services rendered to insurance societies does not seem of a kind to encourage extravagant hopes for medical remuneration at rates fixed by bargaining with insurance organizations.

The third possibility is that the premiums might be handed to the friendly societies, who would accept the responsibility of providing the medical service, the Treasury grant and employers' contribution being relied upon to attract into the societies the ten millions of the future scheme who are not already there. Surely there is no need to elaborate argument under this head, or to show that even if the societies decided to grant choice of doctor and payment for work done, as they might do, the contract would in future take place in fixing the scale of payment per visit, and might have results compared with which the club practice of the past might appear a traditional golden age.

The last possibility is that the responsibility should be assumed by a professional organization, and only those who believe that a professional organization would be less likely to secure an adequate premium, and less ready than

a business organization to demand increase should the initial rates prove too low, are likely to consider this as unpractical.—I am, etc.,

Dundee, Nov. 20th. R. C. BUIST.

SIR,—Dr. Buist says that I misread his letter and the present situation. I fear that I read the present situation much better than Dr. Buist, and unless I misread his letter in the JOURNAL for November 19th, it is a most deplorable attitude, from the general practitioner's point of view, for one of our "Representatives" to take.

His letter advocates the Chancellor's side of the case in a deal with the profession, and asks that we should imagine ourselves conducting an interview with that official.

If a representative of the profession (as he ought to be) met a Chancellor of the Exchequer (as Dr. Buist represents him) I imagine the interview would be something of this kind:

Representative of Profession. I have submitted your wishes for medical attendance upon some 15,000,000 people to the profession, and the matter has had most careful consideration, and we are prepared to undertake the work at the following fees (producing the tariff which the profession will fix).

Chancellor of Exchequer. Oh! but never mind the fees. What s the sum total? I must fix a definite amount, as it is easier nd simpler to budget for.

Representative of Profession. If you will tell me exactly the amount of medical attendance you require I will soon give you the sum total necessary to pay for it.

Chancellor of Exchequer. But that is just what I can't do; nobody can possibly tell.

Representative of Profession. Then if you can't tell the amount of work required nobody can possibly tell the cost, and I cannot pledge my "profession" to provide unlimited work for limited pay. [*Exit.*

I might liken such a transaction to a similar one in land. Suppose a man offered his estate for sale, the first question asked would be, How many acres is it? If he replied that he did not know, but somewhere between 1,500 and 2,000 acres, the only business-like proposition would be to bargain at so much per acre. Any other method would be a mere gamble, in which either one or the other would certainly be a heavy loser.

The profession need not fear any Chancellor getting the work done by whole-timers or through the friendly societies, because it cannot be done; there are not enough men to staff such a service, and the 15,000,000 people will not be satisfied with young and inexperienced men, nor with old and unsuccessful men, but will insist upon having a reliable class of practitioner, and there is only one source of supply available.

Also a Chancellor is usually a sufficiently business-like person to see that no service which is obnoxious on account of its injustice to both the servitors and the beneficiaries is likely to be anything but a failure, however cheap it may be.

Dr. Taylor's suggestion in the JOURNAL of November 12th was also a deplorable one from the view of a general practitioner, especially coming from a "Representative." Does Dr. Taylor imagine for one instant i we want a certain scheme, and go with an alternative one, which is apparently easier and cheaper, to offer in case the first one is refused, that anything but a blank refusal will be forthcoming?

May I again liken it to a purchase? If Dr. Taylor wanted a certain house and sent his "representative" to buy at £1,500, with power to go up to £2,000, what would he think if his solicitor said, "I have come to buy such-and-such a house, and I offer £1,500; but if you won't take that, I can go up to £2,000." The cases are not quite parallel, because the "profession" does not want the "house," and if the vendors will not take what the representative is commissioned to give, he should not be able to grant any other terms.

It is a very serious matter that most of the letters in the JOURNAL which advocate "giving ourselves to the Government at their own price" come from "Representatives"—that is to say, they were elected to represent us before any such scheme was even thought of—and that to-day nearly all the general practitioners are against the payment "per capita" and in favour of "payment for work done," while the "Representatives" seem entirely wedded to payment "per capita" and against "payment for work done," their chief argument being "because we shan't get the latter."

If the British Medical Association will take the trouble to learn how the profession really feels on this matter and then really represent them (or should it be "it"?) we shall have no more resolutions *à la* Gateshead; but if they go on as they are, I cannot conceive how such an end is avoidable.

I will answer the question which I put to Dr. Buist and which he does not answer. Once the true voice of the profession has spoken its verdict for any course of action, I will support the Association in carrying it out, with one proviso—that such action shall not deprive any section of the profession who protest against it of their livelihood, even though it be for the benefit of other sections.—I am, etc.,

Northwich, Nov. 21st. HENRY EDWARD GOUGH.

STATE SICKNESS AND INVALIDITY INSURANCE.

SIR,—For so many months now have the champions of "payment for services rendered, as in private practice," been prancing up and down the lists on their high-mettled steeds, looking vainly around for some one to come forth to take up one or other of the gauntlets that strew the green, that the spectators had almost despaired of seeing any fun. However, at last a champion has entered the lists from the Far North and announced his battle cry to be "Semper eadem." So quickly, however, have the Knights of Liberty fallen on to him, forgetful of all rules of precedence, that he would seem to need to repeat, like the escaped parrot to the inquisitive pecking sparrows: "One at a time, please, gentlemen!"

In your issue of September 17th appeared a memorandum asking this question:

On what terms and on what conditions does the medical profession suggest that its necessary services should be placed at the disposal of the State in any scheme the Government may bring forward to cover invalidity and sick insurance?

In your issue of October 22nd following appeared a letter in which were elaborated certain questions that required consideration before a full reply to this question could be given.

The first important question, namely:

1. *Is it desirable that a State invalidity and sick insurance scheme should include medical attendance?*

has been answered already by the Chancellor of the Exchequer on November 18th in the affirmative; and so there is no need for the medical profession to discuss it further.

Out of the long list of questions in that letter only two need prompt attention by the medical profession. On these two the champions have now joined battle. They are:

2. *In whose hands should the central promotion, organization, and control of the medical attendance portion of such a scheme be?*
3. *Should the contract made with the medical profession be* (a) *in the form of an annual capitation grant, or* (b) *on a tariff of fees for work done, as in private practice?*

The question of control, like the first question, may be settled without the medical profession being consulted. If the Association would come into line, and urge the profession to demand State control, either by an *ad hoc* board of represented interests or by special commissioners, it might be possible to avoid permanent friendly and other insurance societies being appointed.

But if the northern champion, quoting old stock aphorisms which in no way apply to the new situation that has been created by the Government entering the field, urges the acceptance of British Medical Association control, then most certainly friendly society control will come about. He must know that the Association cannot accept the work under its memorandum of association; it could only do it as an agent; there would be no funds to offer as security in competition with permanent friendly societies in making an offer to undertake the work; half the profession is outside the Association, and a quarter of that number would not have the Association at any price,

and would probably appeal to the Government against any such proposal.

Result: Discord, disunion, defeat, professional death.

Then the question of payment. There are two systems; for against whole-time appointments all seem united.

The northern champion's third cry is "honorarium"—for an annual capitation payment is nothing more or less. He produces no actuarial opinion stating that his proposal is insurance and not an honorarium; he mentions no sum, although 10s. a head has been hinted at; he does not define the services for which this honorarium is to be the reward; he advances no scheme by which to prevent the amount of benefits which can be obtained in return for this honorarium exceeding a maximum limit: and so he goes galloping wildly down the course, lance in rest, shouting "Semper eadem"; "B. M. A. for ever"; "honorarium"; driven by his keen desire to help the Chancellor of the Exchequer to save the bawbees.

Many standing around the palisades who openly favour this doughty champion acknowledge in private that their sympathies are with his opponents; but they seem to be too timid to take their courage in both hands and to say so.

Dr. Taylor of Salford, in his communication, says, "Demand payment for services rendered as in private practice"; but he adds, *sotto voce*, "if we cannot get it, then accept an honorarium." Alas! what fainthearted-ness!

Is it not time that the medical profession realized that it is primarily a scientific body, and not a lot of hirelings whose mercenary instincts urge them to undertake commercial work they are not trained for on terms that only competition and discussion make possible?

If the reply is "Yes," then let us unite during the coming campaign under the battle cry of "Liberty and Justice," and have done with what seems like attempts to lull us into sleep and to fog the issues—the quoting of prehistoric aphorisms and pleading poverty.—I am, etc.,

Southfields, S.W., Nov. 21. E. Rowland Fothergill.

Sir,—I should have thought that the views I have put forward on this subject were sufficiently clear, and I have little doubt that they are understood by most of your readers. It would appear, however, that some seem to have a natural liking for obscurity, and will even find it where it is non-existent. Dr. Grey writes that it is evident from my letter of November 12th that I had "misconceived" the position of those reformers who publish impossible schemes. To the best of my belief I am labouring under no misconception. I never referred to Dr. Grey's scheme specially, but his conscience would seem to rush to the conclusion that I must have been thinking of his views. I quite agree that the State should pay sufficient to the insured to enable them to defray their own medical attendance, but I certainly do not approve that the State should provide the service he requires. This I have consistently opposed at all times. Dr. Grey is surprised that I should object to the State imitating a fire insurance company, that supplies burnt articles in kind rather than in cash. The analogy is an exceedingly unfortunate one, in my opinion, and does not help his argument a bit. The complexity of such an arrangement must be obvious to all. Dr. Grey further says that he cannot see why his proposals would force poor people to give up their own private doctors. I never said his proposals would. I have all along *consistently* maintained that the only methods the State could, in my opinion, adopt for providing medical attendance—namely, the capitation method, or that by means of salaried officials—would have this effect. The argument that the State is greatly interested in seeing that a beneficiary's insurance is properly spent on the right kind of medical attendance may be very true, but it does not tend towards choice of doctors by poor people. His remarks about the "works" doctors may or may not be true, but in either case they are not complimentary to a considerable class of our professional brethren, and do not help to unite us in a common union. In conclusion, I would add that my personal opinions may be of very little value, and possibly shared by only few of my brethren, but I must contend that they are neither inconsistent nor obscure, and do not call for certain criticisms that have been made by some of your correspondents.—I am, etc,

London, N.E., Nov. 19th. Major Greenwood.

MEDICAL PRACTICE BY FOREIGNERS IN ITALY.

Sir,—Will you allow me to point out some inaccuracies which occur in your reply to your correspondent, "Dr. G. H.," in the Journal of November 12th, p. 1571, in regard to the new law "Per gli ordini dei Sanitari" in Italy? You state that all foreign medical men other than those belonging to the two categories you have specified "are forbidden to practise unless they naturalize as Italian citizens, and obtain degrees from Italian universities." This is an error; the law merely requires that such medical men shall be "nel godimento dei diritti civili" (in the enjoyment of civil rights); in other words, that they must have the ordinary rights pertaining to persons of full age, of sound mind, in possession of their personal liberty, etc., in which case, and having obtained an Italian degree, they are eligible for registration as medical practitioners. Naturalization is, therefore, not required for that purpose.

Again, in the case of those belonging to the second category, namely, foreign practitioners possessing diplomas of countries which do not grant reciprocity of medical practice to Italy, but who were practising in this country at the date (July 19th, 1910) of the promulgation of the Act, the liberty of continuing the exercise of their profession is only accorded to those of their number who had already at that time been enrolled on the list of contributories to the income tax for a period of more than three (not two) years. This provision in reality makes the law retrospective in their case for fully *four* years, since the newcomer's name does not appear on that list in the first year of his residence.

Although these restrictions do not affect those holding diplomas granted in the United Kingdom, they are of sufficient general interest to make an accurate statement of them desirable.—I am, etc.,

G. Sandison Brock, M.D.,
Physician to the British Embassy at Rome.

Rome, Nov. 18th.

THE MEDICAL DEFENCE UNION.

Sir,—The attention of the Council of the Medical Defence Union has been called to the issue by the Car and General Insurance Corporation, Limited, of a circular *re* benefits under an "eclectic policy," and in which the name of the Medical Defence Union is used without our authority or consent, and without any previous knowledge on our part that it was intended so to be used. I am directed to state for the benefit of members of the medical profession that the Medical Defence Union has no connexion in any way with the above company, and that it has not entered into any agreement with it whatever in respect of any such "indemnity policy," and that the only company authorized to use the name of the Union in respect of any "indemnity policy" is the Yorkshire Insurance Company, Limited, Bank Buildings, Princes Street, E.C.—I am, etc.,

A. G. Bateman,
General Secretary.

London, W.C., Nov. 18th.

THE LONDON AND COUNTIES MEDICAL PROTECTION SOCIETY.

Sir,—It has been brought to the notice of the Council of the London and Counties Medical Protection Society, Limited, that indemnity insurance policies are being issued to members of the society (in respect of damages and costs of the other side in actions undertaken by this society) by the Car and General Insurance Corporation, Limited, and I am directed to inform members of the London and Counties Medical Protection Society that the Car and General Insurance Corporation has received no authority from this society, and that this society accepts no responsibility in the matter.—I am, etc.,

London, W.C., Nov. 22nd. Hugh Woods.

a business organization to demand increase should the initial rates prove too low, are likely to consider this as unpractical.—I am, etc.,

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SIR,—For so many months now have the champions of "payment for services rendered, as in private practice," been prancing up and down the lists on their high-mettled steeds, looking vainly around for some one to come forth to take up one or other of the gauntlets that strew the green, that the spectators had almost despaired of seeing any fun. However, at last a champion has entered the lists from the Far North and announced his battle cry to be "Semper eadem." So quickly, however, have the Knights of Liberty fallen on to him, forgetful of all rules of precedence, that he would seem to need to repeat, like the escaped parrot to the inquisitive pecking sparrows: "One at a time, please, gentlemen!"

In your issue of September 17th appeared a memorandum asking this question:

On what terms and on what conditions does the medical profession suggest that its necessary services should be placed at the disposal of the State in any scheme the Government may bring forward to cover invalidity and sick insurance?

In your issue of October 22nd following appeared a letter in which were elaborated certain questions that required consideration before a full reply to this question could be given.

The first important question, namely:

1. *Is it desirable that a State invalidity and sick insurance scheme should include medical attendance?*

has been answered already by the Chancellor of the Exchequer on November 18th in the affirmative; and so there is no need for the medical profession to discuss it further.

Out of the long list of questions in that letter only two need prompt attention by the medical profession. On these two the champions have now joined battle. They are:

2. *In whose hands should the central promotion, organization, and control of the medical attendance portion of such a scheme be?*
3. *Should the contract made with the medical profession be* (a) *in the form of an annual capitation grant, or* (b) *on a tariff of fees for work done, as in private practice?*

The question of control, like the first question, may be settled without the medical profession being consulted. If the Association would come into line, and urge the profession to demand State control, either by an *ad hoc* board of represented interests or by special commissioners, it might be possible to avoid permanent friendly and other insurance societies being appointed.

But if the northern champion, quoting old stock aphorisms which in no way apply to the new situation that has been created by the Government entering the field, urges the acceptance of British Medical Association control, then most certainly friendly society control will come about. He must know that the Association cannot accept the work under its memorandum of association; it could only do it as an agent; there would be no funds to offer as security in competition with permanent friendly societies in making an offer to undertake the work; half the profession is outside the Association, and a quarter of that number would not have the Association at any price,

and would probably appeal to the Government against any such proposal.

Result: Discord, disunion, defeat, professional death.

Then the question of payment. There are two systems; for against whole-time appointments all seem united.

The northern champion's third cry is "honorarium"—for an annual capitation payment is nothing more or less. He produces no actuarial opinion stating that his proposal is insurance and not an honorarium; he mentions no sum, although 10s. a head has been hinted at; he does not define the services for which this honorarium is to be the reward; he advances no scheme by which to prevent the amount of benefits which can be obtained in return for this honorarium exceeding a maximum limit: and so he goes galloping wildly down the course, lance in rest, shouting "Semper eadem"; "B. M. A. for ever"; "honorarium"; driven by his keen desire to help the Chancellor of the Exchequer to save the bawbees.

Many standing around the palisades who openly favour this doughty champion acknowledge in private that their sympathies are with his opponents; but they seem to be too timid to take their courage in both hands and to say so.

Dr. Taylor of Salford, in his communication, says, "Demand payment for services rendered as in private practice"; but he adds, *sotto voce*, "if we cannot get it, then accept an honorarium." Alas! what fainthearted-ness!

Is it not time that the medical profession realized that it is primarily a scientific body, and not a lot of hirelings whose mercenary instincts urge them to undertake commercial work they are not trained for on terms that only competition and discussion make possible?

If the reply is "Yes," then let us unite during the coming campaign under the battle cry of "Liberty and Justice," and have done with what seems like attempts to lull us into sleep and to fog the issues—the quoting of prehistoric aphorisms and pleading poverty.—I am, etc.,

Southfields, S.W., Nov. 21. E. Rowland Fothergill.

Sir,—I should have thought that the views I have put forward on this subject were sufficiently clear, and I have little doubt that they are understood by most of your readers. It would appear, however, that some seem to have a natural liking for obscurity, and will even find it where it is non-existent. Dr. Grey writes that it is evident from my letter of November 12th that I had "misconceived" the position of those reformers who publish impossible schemes. To the best of my belief I am labouring under no misconception. I never referred to Dr. Grey's scheme specially, but his conscience would seem to rush to the conclusion that I must have been thinking of his views. I quite agree that the State should pay sufficient to the insured to enable them to defray their own medical attendance, but I certainly do not approve that the State should provide the service he requires. This I have consistently opposed at all times. Dr. Grey is surprised that I should object to the State imitating a fire insurance company, that supplies burnt articles in kind rather than in cash. The analogy is an exceedingly unfortunate one, in my opinion, and does not help his argument a bit. The complexity of such an arrangement must be obvious to all. Dr. Grey further says that he cannot see why his proposals would force poor people to give up their own private doctors. I never said his proposals would. I have all along *consistently* maintained that the only methods the State could, in my opinion, adopt for providing medical attendance—namely, the capitation method, or that by means of salaried officials—would have this effect. The argument that the State is greatly interested in seeing that a beneficiary's insurance is properly spent on the right kind of medical attendance may be very true, but it does not tend towards choice of doctors by poor people. His remarks about the "works" doctors may or may not be true, but in either case they are not complimentary to a considerable class of our professional brethren, and do not help to unite us in a common union. In conclusion, I would add that my personal opinions may be of very little value, and possibly shared by only few of my brethren, but I must contend that they are neither inconsistent nor obscure, and do not call for certain criticisms that have been made by some of your correspondents.—I am, etc,

London, N.E., Nov. 19th. Major Greenwood.

MEDICAL PRACTICE BY FOREIGNERS IN ITALY.

Sir,—Will you allow me to point out some inaccuracies which occur in your reply to your correspondent, "Dr. G. H.," in the Journal of November 12th, p. 1571, in regard to the new law "Per gli ordini dei Sanitari" in Italy? You state that all foreign medical men other than those belonging to the two categories you have specified "are forbidden to practise unless they naturalize as Italian citizens, and obtain degrees from Italian universities." This is an error; the law merely requires that such medical men shall be "nel godimento dei diritti civili" (in the enjoyment of civil rights); in other words, that they must have the ordinary rights pertaining to persons of full age, of sound mind, in possession of their personal liberty, etc., in which case, and having obtained an Italian degree, they are eligible for registration as medical practitioners. Naturalization is, therefore, not required for that purpose.

Again, in the case of those belonging to the second category, namely, foreign practitioners possessing diplomas of countries which do not grant reciprocity of medical practice to Italy, but who were practising in this country at the date (July 19th, 1910) of the promulgation of the Act, the liberty of continuing the exercise of their profession is only accorded to those of their number who had already at that time been enrolled on the list of contributories to the income tax for a period of more than three (not two) years. This provision in reality makes the law retrospective in their case for fully *four* years, since the newcomer's name does not appear on that list in the first year of his residence.

Although these restrictions do not affect those holding diplomas granted in the United Kingdom, they are of sufficient general interest to make an accurate statement of them desirable.—I am, etc.,

G. Sandison Brock, M.D.,
Physician to the British Embassy at Rome.

Rome, Nov. 18th.

THE MEDICAL DEFENCE UNION.

Sir,—The attention of the Council of the Medical Defence Union has been called to the issue by the Car and General Insurance Corporation, Limited, of a circular *re* benefits under an "eclectic policy," and in which the name of the Medical Defence Union is used without our authority or consent, and without any previous knowledge on our part that it was intended so to be used. I am directed to state for the benefit of members of the medical profession that the Medical Defence Union has no connexion in any way with the above company, and that it has not entered into any agreement with it whatever in respect of any such "indemnity policy," and that the only company authorized to use the name of the Union in respect of any "indemnity policy" is the Yorkshire Insurance Company, Limited, Bank Buildings, Princes Street, E.C.—I am, etc.,

A. G. Bateman,
General Secretary.

London, W.C., Nov. 18th.

THE LONDON AND COUNTIES MEDICAL PROTECTION SOCIETY.

Sir,—It has been brought to the notice of the Council of the London and Counties Medical Protection Society, Limited, that indemnity insurance policies are being issued to members of the society (in respect of damages and costs of the other side in actions undertaken by this society) by the Car and General Insurance Corporation, Limited, and I am directed to inform members of the London and Counties Medical Protection Society that the Car and General Insurance Corporation has received no authority from this society, and that this society accepts no responsibility in the matter.—I am, etc.,

London, W.C., Nov. 22nd. Hugh Woods.

ALCOHOLISM AND DEGENERATION.

SIR,—I shall esteem it a favour if you will spare me the space for a few lines of reply to Sir Victor Horsley's letter in your last issue. Sir Victor Horsley states that my only reply to the criticisms of Dr. Saleeby and himself is that "*if some* children were born before the parental alcoholism had started *some* were certainly born after." Sir Victor Horsley does not state:

1. That the italics are his and not mine.
2. That he has taken a *qualifying* sentence which begins and ends with a comma out of its context, and not even cited its *locus*.

The actual sentence occurs in my *Questions of the Day and the Fray*, No. I (Dulau and Co.), p. 15, and it runs:

> The reply to this is that there are as many children of 5 and 6 as of 11 and 12 [that is, offspring of alcoholists in our data], and if some children were born before parental alcoholism had started, some were certainly born after, and therefore this mixed category should be worse than the category containing children whose parents have not been alcoholic at all.

Sir Victor Horsley states that my "only reply" has been the clause he extracts. He means probably the "only reply" he has himself seen. The whole matter will be further discussed in a forthcoming *Second Study on Parental Alcoholism*. Meanwhile, instead of referring Sir Victor to other places where I have dealt with this point, I will ask your permission to cite a few lines of that memoir:

> The actual answer to the difficulty raised by Sir Victor Horsley and Dr. Saleeby could have been found by them at once had they studied the data in our memoir. Of the alcoholic parents, a slightly *larger* percentage of the offspring *lies* between 5 and 7 years of age than in the case of sober parents, 30 per cent. as against 27 per cent. and the ratio of the number of children between 5 and 7 to those between 12 and 14 is for *both* drinking and sober parents 1.6. But if the parents only became alcoholic to any large extent after the birth of their children, it will be clear that the ratio of young to old offspring in the case of the alcoholic must be very different from what it is in the case of sober parents. Actually the alcoholic have as many *young* children as the sober, and there is no place for a large number of the alcoholic to have become such after the birth of their children. The only artifice by which Sir Victor Horsley and Dr. Saleeby could get out of this difficulty would be to assert that alcoholism never develops until the youngest children of a family are of school age. Granted this, however, we see that the assertion that alcoholism in the parent produces mental defect in the children must be idle, for all the children would be borne before alcoholism begins!

This second memoir by Miss Elderton and myself will consider the whole of the statistical evidence cited by Sir Victor Horsley and Dr. Sturge in their work on *Alcohol and the Human Body*, and analyse its scientific value. Meanwhile, I should like to put one very simple question to Sir Victor. On pp. 324–6 (edition 1907), Dr. Sturge and he tells us that the effect of alcohol as a factor in the causation of mental deficiency has been "strikingly shown" by Dr. MacNicholl's examination of 55,000 school children. My question is, whether Sir Victor Horsley agrees in considering Dr. MacNicholl's memoir "valueless" and "absolutely misleading" because he merely inquired whether the parents of the children took beer, wine, or spirits, and did not ascertain whether that habit antedated or postdated the conception of the offspring?

I am not at all sure that when Sir Victor Horsley sees in ten days' time our forthcoming memoir he will not regret using such a very double-edged knife as that by which he proposes to root up the basis of our first study.—I am, etc,

KARL PEARSON.

Eugenics Laboratory,
University College, W.C., Nov. 19th.

SIR,—I take it to be a sound rule that a critic should not engage in controversy with those who think themselves aggrieved by his decisions. If, however, the statements contained in the letter of Miss Sturge and Sir Victor Horsley had been based on fact, I should have been guilty of a violation of the trust reposed in me as a reviewer, so that a word of explanation seems due to you, Sir, and your readers. The work of Professor Pearson and Miss Elderton was asserted to be valueless because (1) the samples classified as alcoholic and non-alcoholic were differentiated in other respects; (2) there was no evidence as to the habits of the parents before the birth of their children. I carefully studied the evidence adduced by Mr. Keynes, among others, in support of the former contention, and was, and still am, unable to discover its relevance, since nothing was attempted in the way of an appeal to other statistical experience. With respect to the second contention, it will be found on examination of Professor Pearson and Miss Elderton's data that their alcoholic sample has proportionally as many quite young children as their non-alcoholic subjects. This fact is utterly irreconcilable with the truth of the objection. As stated in the editorial, the time has not yet come for a final pronouncement on the important questions raised by the memoir under notice. I do not, however, believe that purely *ex cathedrâ* statements, even when they proceed from such eminent scientific authorities as Dr. C. W. Saleeby and Sir Thomas Whitaker, deserve any other treatment than they received in my notice. *De non apparentibus et non existentibus eadem est ratio* is a valid principle even when its user has the misfortune to differ from so courteous a writer as Sir Victor Horsley.—I am, etc,

YOUR CONTRIBUTOR.

"BOVRIL."

SIR,—The remarks made under the above title in the Medico-Ethical column of the JOURNAL of November 19th are, I feel sure, based on an incorrect appreciation of the facts, and as I am principally concerned, I should like to state them, if you will be good enough to give me the opportunity.

In the course of an investigation undertaken at the personal and unofficial request of the Medical Commissioner of the Local Government Board of Ireland, without the knowledge of the Bovril Company, to ascertain for him, whether the beef extract in question had any nutritive properties or not, the following facts came out: (1) The weight of the animals used in the feeding experiments increased during the period when the extract was given out of all proportion to the amount added to their food. Knowing something of the effects of different foods in this respect the result was to me surprising. (2) The extract greatly increased the assimilation of the other food constituents of the animals' diet. This was shown in a reduction (often to less than 50 per cent.) of the waste escaping as faeces, not alone in regard to total quantity, but also in the proportion of nitrogen contained in the excreta. (3) Nitrogen was retained by the animals and presumably stored in the body during the period of feeding with the extract in the majority of the experiments.

Now I venture to ask, What is to be done with facts of the above nature? Are they to be suppressed, or are they to be pushed, as far as possible, to their scientific conclusions and published? One of them, be it noted, is seemingly of far-reaching significance, in view of the increasing scarcity of animal food in the world, and of the greater necessity for mankind to draw upon cereals, etc., for the nitrogen necessary to subsistence.

I have no interests to serve in the matter other than those of science, and I have decided to pursue the latter course. Is it too much to ask, not merely to be allowed unhindered to do so, but to be assisted in following up these and kindred questions which may arise out of the inquiry, as far as my abilities and opportunities permit?

During the investigation an initial attempt was made to standardize the nutrient effects of the beef extract against those of some well-known protein, egg-white being chosen. The results in themselves were remarkable, but the main point is that I was forcibly impressed with the fact, upon which I had often previously reflected—namely, that we know nothing of the relative nutrient properties of the everday proteins we consume in our dietaries. How is reliable knowledge on such matters to be obtained? In no other way, to begin with, than by laboratory investigations. But we have no laboratories in Great Britain where such questions can be solved on an adequate scale. Some exist in America, and a few on the Continent of Europe. There is room, however, for many more in the world, and I confess it is my ambition to see one founded in Dublin.

I hold, also, that it would be a praiseworthy and benevolent act of any great manufacturing or producing company, catering for the wants of the people in the matter of food supplies, to assist in the founding of such a

nutrition laboratory. We often grumble that science does not receive more support from manufacture and commerce. But is it matter for surprise when, as not infrequently happens, some one or some thing intervenes to hamper or prevent industry from reaping the advantage of scientific discovery?

A few words more and I have done. The British Association for the Advancement of Science has nothing to answer for in the matter. The results were communicated to one of its sections in Sheffield under the title, "The Nutritive Effects of Beef Extract." It was there stated that a commercial extract was used in the investigation, but the name was not made public. Lastly, as regards the Local Government Board of Ireland, I have heard the comment made in England that it was an enlightened thing of the Medical Commissioner to have done before deciding for or against the admission of the preparation to the Board's list of articles suitable for workhouse infirmaries, and perhaps I might add that I agree. Moreover, the report is not yet furnished to the Local Government Board, the investigations not being complete.—I am, etc.,

School of Physiology, Trinity College, Dublin, Nov. 20th. W. H. Thompson.

Sir,—In your issue of November 19th, under Medico-Ethical (p. 1661), is a reference to "Bovril," which contains the remark, "We are amazed that the authorities of the British Association should have considered the subject matter suitable for a communication to one of its sections."

As Recorder of the Section of Physiology, I beg to point out that neither in any paper nor in any discussion on any paper was there any reference to "Bovril."—I am, etc.,

H. E. Roaf.

School of Physiology, Thompson Yates Laboratories, Liverpool, Nov. 22nd.

DR. HADWEN AND THE "CRIMSON CROSS REMEDIES."

Sir,—The gist of Dr. Hadwen's letter, published in the Journal of the 19th inst., is that he is obliged to you for publishing the correspondence on the Crimson Cross Remedies, but that it passes his comprehension why it should be published, and this merely because the letters were written a few months ago.

Surely the opinions he expressed and the remarkable statements he made in June are just as suitable for publication in November as in June, unless he now wishes to repudiate them.

The correspondence arose out of an advertisement in the *Vaccination Inquirer*. Dr. Hadwen has taken the trouble to write about this and still pleads he has not seen the advertisement, which appeared regularly for six or seven months last year, conspicuously displayed on the cover of that organ. It may be natural modesty that prevents Dr. Hadwen from seeing so many consecutive numbers of the official organ of the League in which he takes so much interest, for no other journal so completely appreciates Dr. Hadwen's special attributes or so frequently announces his special qualifications.

If Dr. Hadwen is really pleased to see his letter in print, why should he carp at the fact of its publication?

I did not distinctly declare my intention not to publish Dr. Hadwen's letter, as he erroneously states. I merely stated that I declined to allow him to make an indirect attack on the British Medical Journal in the columns of the *Jennerian*, as suggested by Dr. Hadwen. This did not in any way interfere with my right to publish the letter elsewhere, in accordance with the permission contained in the postscript to his letter.

Dr. Hadwen is inaccurate in other particulars. He says I did not bring forward a single issue in my reply to his letter which he had not already answered. This statement is not correct. If he will take the trouble to read my letter again he will find eight or nine specific questions on points relative to the discussion which up to this moment remain unanswered by him. For these reasons the boast that he has "been perfectly open and straightforward" is empty and vain.

Will Dr. Hadwen kindly drop quibble and evasion and answer the plain and simple questions which were addressed to him in my second letter? So far he has not had the courtesy to acknowledge its receipt.

My object in submitting the correspondence to the Journal was to expose Dr. Hadwen's ridiculous defence of the Crimson Cross Remedies, and to draw attention to the offensive attitude he adopts towards the profession of which he is a member. Dr. Hadwen's strange bias in favour of the pseudo-practitioner as against what he calls "orthodox" practitioners is well illustrated by his solicitude on behalf of the proprietor of the Crimson Cross Remedies, advertised to cure practically all diseases to which mankind is liable. He says he knows nothing about the advertised claims, many of which were published, under the head of Secret Remedies, in the Journal of May 7th, 1910. Notwithstanding this want of knowledge, Dr. Hadwen pleads that these things (which he says he knows nothing about) should not be made "the butt for unnecessary medical editorial sarcasm."

He seems to forget that he has already "damned with faint praise" the nostrum under consideration by limiting its virtues, in his opinion, to the oleaginous base (linseed oil). This is surely more cutting than editorial sarcasm.

When contrasted with his repeated attacks on his fellow-members of the medical profession, his apologia for the Crimson Cross Remedies, of which he writes, "I have respect both for the preparation and for the gentleman who makes it," is, to say the least, remarkable.

Dr. Hadwen's respect for the members of his own profession has been expressed in a speech he made at the annual meeting of the National Antivaccination League in London, March 11th, 1908. He is reported to have said (vide *Vaccination Inquirer*, April 1st, 1908, p. 20):

> . . . They must be on their guard against new professional methods, and he particularly urged that the proposed medical inspection of school children should be carefully and earnestly watched, for there was no more dangerous set of people than medical men when they had the power against the bodies and the consciences of the people.

It may pass Dr. Hadwen's comprehension why I should republish this exceedingly offensive pronouncement. Lapse of time cannot expiate such an offence, and so far as I am aware the accuracy of the report has never been questioned. When Dr. Hadwen has answered the questions in my second letter and completed his defence of the Crimson Cross Remedies and the advertisement in which his name appeared, I invite him to enter on his own defence of the contrast narrated above.—I am, etc.,

Halifax, Nov. 21st. Arthur Drury.

THE DISCUSSION ON THE DIAGNOSTIC VALUES OF OPHTHALMOPLEGIA, PARTIAL AND TOTAL.

Sir,—I am sorry to trouble you in the matter, but would you very kindly call attention to a correction that is necessary in my opening remarks in the Ophthalmological Section of the British Medical Association Meeting, 1910?

It is an error that occurs on page 1316 of the Journal of October 29th, in speaking of the diagnosis of intracerebellar and extracerebellar tumours:

> Not only in the diagnosis, but also in the localization, of intracranial tumours, however, do we look for assistance from ocular paralysis, as is as well illustrated by what obtains in connexion with the cerebellum as by any other example that I can suggest. The indications of intracranial tumour may be clear, and those pointing to the region of the cerebellum equally so, but to cranial nerve paralysis, among other signs, we look for assistance in our attempts to determine whether the tumour be *intracerebellar or extracerebellar;* and no such paralysis is more common than that of eye muscles—a condition of things which obtains in *the former variety* but not in *the latter.*

"The latter" should appear where "the former" has been used, as paralysis of the cranial nerves is more common and more pronounced in extracerebellar tumours than in the intracerebellar varieties.—I am, etc.,

London, W., Nov. 16th. J. S. Risien Russell.

UNQUALIFIED PRACTICE AND CRIME.

Sir,—A sensational murder trial is over, and the prisoner has, after a fair trial, been convicted and executed.

I think it is now time that the attention of the public, and also of the medical profession, should be drawn to the slur which, though unjustly, has fallen on our calling.

Crippen came to this country, and practised illegally. He was allowed to freely advertise all sorts of quack nostrums, to associate his name with some commercial ventures of questionable character, though they had a medical aspect. He was both before the murder and also during his trial freely spoken of in the lay press as "Doctor" Crippen, and by many ignorant people he was probably regarded as a duly registered practitioner whom it was quite safe to consult. There are scores of such interlopers in this country. The daily papers reap a rich harvest from the vulgar advertisements of these parasites. Their illustrations often depict a man in professional attire, drawing attention by studied attitudes, or by theatrical pose of hand or finger to the terrifying effects of every malady, and to the boons which sufferers from every ailment may obtain by purchasing rubbish, although bearing a totally inadequate Government stamp. It is doubtful if these men would be allowed to carry on this nefarious trade in their own countries. But in Britain freedom is permitted to degenerate into disgraceful licence, and the medical profession is being lowered in the estimation of the public.

But this is not the most serious aspect of this terrible murder case. Crippen was undoubtedly enabled to obtain a large quantity of deadly poison owing to the fact that he styled himself, and was known to druggists, as "Dr." Crippen. It was stated in evidence that he was not always required to sign the "poison book" when purchasing, thus showing how he was looked upon as being a duly registered practitioner. I very much doubt if druggists would extend the same want of precaution to me.

Here, then, is a chief danger to the public. Crippens and Neill Creams may flood our metropolis; they may successfully compete with our duly qualified members of an overworked and underpaid profession; they may, without question or suspicion, obtain large amounts of poisons; they may commit murders, and their detection may be entirely due to some accidental circumstance.

It is now time that the British Medical Association, or the Medical Council, or both, should urge and compel the Legislature to take such steps as shall at once protect the public and also the profession from the shameful and shameless harpies who prey on the credulity of suffering humanity—I am, etc.,

London, W., Nov. 23rd. SEYMOUR TAYLOR.

THE CONTROL OF MEASLES INFECTION.

SIR,—Taking into consideration the high death-rate among children due to complications occurring during measles, and the serious nature of many of the sequelae, is it not imperative that some steps should be taken without delay to endeavour as far as possible to reduce the spread of infection, in at all events one direction? I refer especially to the County Council day schools.

The present rule, which is apparently carried out relentlessly, is, that where one child or more in a family is suffering from measles, all the brothers and sisters (when there are any) are compelled to attend school, although in many instances the entire family live in one room; there being, as far as I can ascertain, no distinction made or allowed on account of restricted domicile.

I know of at least one school where the instructions to the parents of patients are that all the children in the family who had previously suffered from measles must attend school, but not those who had not suffered from the complaint. This is of course absurd, as it is well known that one attack of measles does not confer immunity from further attacks. The chances are very much in favour of the children from infected families, especially in congested areas, where there are no possibilities of isolation, having contracted the disease, which of course lies latent for a certain period—generally accepted as about fourteen days, although on this point authorities appear to be still divided.

The infectiveness of measles is known to be more highly virulent before the disease becomes apparent than after definite symptoms appear, at which period the children are either detained at home or sent home from school by the responsible teacher. By this time the number of victims has been enormously increased by the infected children mixing daily with their healthy school companions. Not only is this a serious matter for the children in many instances, but a great hardship is imposed on the parents, and, in the case of paupers, the rates are very materially added to. The fallacy that measles is a harmless disease, and that all children must necessarily suffer from the complaint at some time of their life, dies hard with the laity.

I maintain that in order to reduce epidemics of measles' children from an infected family should be compelled to remain away from school until declared free from infection by their usual medical attendant or the district medical officer of health.

Another way of checking the complaint is by adding measles to the schedule of notifiable diseases, which surely might be done, if only for a probationary period.—I am, etc.,

HUBERT C. PHILLIPS, M.R.C.S.Eng., L.S.A.Lond.

London, W., Nov. 4th.

Medico-Legal.

NOTIFICATION OF STILLBIRTHS.

J. L. L. writes, with reference to an answer published under this heading in the JOURNAL of November 12th, p. 1566, to point out that there are special forms of certificate for the use of registered medical practitioners only, which must be filled in and delivered to the superintendent of the cemetery or other official when a stillborn child is taken there for burial. This is correct; but the said certificate is really no more than what is usually given by the practitioner on an ordinary piece of notepaper, which is quite as valid at law as the official form. Many practitioners are unaware of the existence of this special certificate form for stillbirths, and some have had special books printed for their own use. One registrar in a busy metropolitan district stated that he had never had this certificate book in his possession, as it had never been applied for by any practitioner. There is no objection to making use of this official certificate form, and it may be well to draw attention to the fact that such may be procured from any registrar free of charge by any registered practitioner.

Medical News.

THE Lord Mayor of London will open a Conference of Health-promoting Institutions, to be held at the Guildhall on December 8th and 9th, which is being organized by the National League for Physical Education and Improvement. The subjects and speakers at the three sessions are as follows: (1) How to work a "School for Mothers" (Lady Meyer, Vice-President of the St. Pancras "School"); (2) infant welfare schemes abroad (Miss H. M. Blagg); (3) day nurseries (Muriel Viscountess Helmsley, Chairman of the National Association of Day Nurseries); (4) what may be accomplished by Children's Care Committees (Miss M. Frere, member of the Education Committee of the London County Council); (5) health societies: their aims and opportunities (Mr. Douglas Eyre); (6) the co-ordination of health-promoting agencies (Mr. F. E. Fremantle, County Medical Officer of Health for Herts). The chair will be taken at the various sessions by Alderman Broadbent of Huddersfield, the Duchess of Marlborough, Mr. Whitaker Thompson (Chairman of the London County Council), and Sir Shirley Murphy (Medical Officer of Health to the London County Council). Tickets of admission may be obtained gratis on application to the Secretary of the League at 4, Tavistock Square, W.C.

THE replies received by the Christian Union to a circular addressed to all the Protestant mission stations in China asking whether the cultivation of opium in various districts of China had been increased or diminished appears to show that there has been in many parts of China a very considerable diminution, and this appears to be generally confirmed by recent consular reports. This has been attended by an increase in the price of imported opium and a small increase in the actual number of chests of Indian opium entered in 1909 as compared with 1908. The policy adopted with the sanction of Lord Morley was gradually to reduce the total export of chests of opium from India by one-tenth each year. In this way the total export was reduced from 61,900 chests in 1908 to 51,700 in 1910. There appears, however, to have been a decrease in other directions greater than the decrease in trade with China. During 1909 the number of chests imported from India had fallen from 47,040 to 41,805 in 1908, but rose to 42,183 in 1909. It would appear, therefore, that the assumption upon which the India Office has acted, that the restriction of the aggregate export of opium from India would in itself bring about the restriction of the import into China, has not been realized.

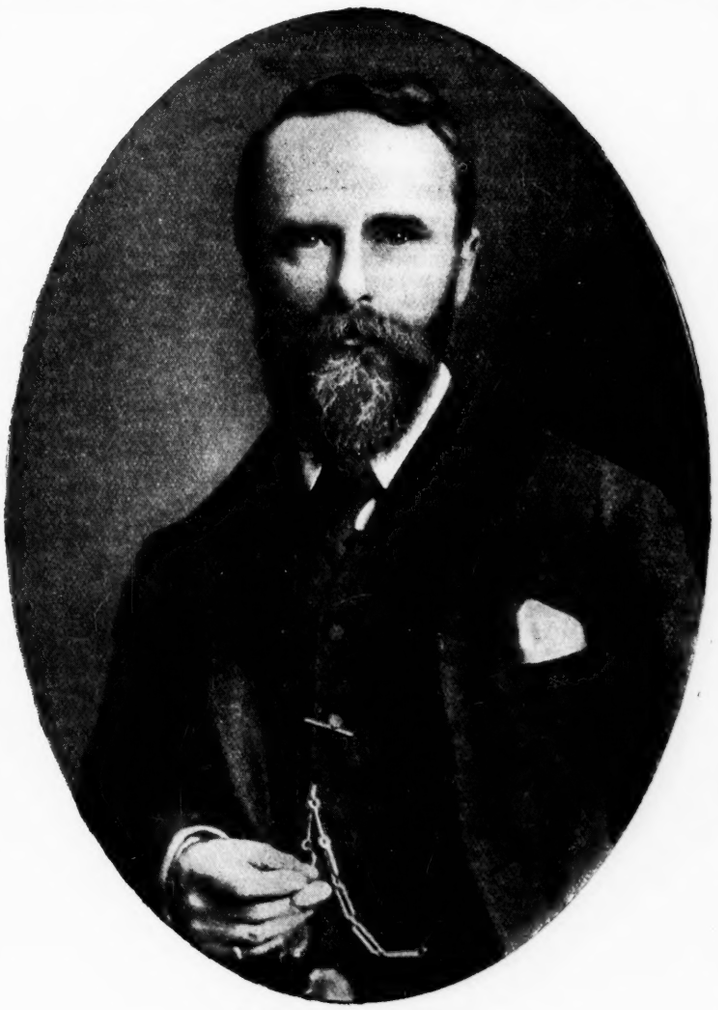
Obituary.

JOSEPH FRANK PAYNE, M.D., F.R.C.P.,

CONSULTING PHYSICIAN, ST. THOMAS'S HOSPITAL.

It is with deep regret that we announce the death of Dr. J. F. Payne, which occurred on November 16th, at his residence, Lyonsdown House, New Barnet, Herts, in the 71st year of his age.

Joseph Frank Payne was born in Camberwell on January 10th, 1840. His father, Mr. Joseph Payne, was a most successful teacher, the first Professor of Education at the College of Preceptors and the author of many educational works, which were popular in their day both here and in America, one of them reaching its eighteenth edition. Frank Payne possessed in a remarkable degree those four qualities which, Hippocrates said, are indispensable to the making of a good physician—learning, modesty, humanity, and probity. Some slight idea of the extent of his learning may be obtained from the brief outline of his work given below; to give a complete account of what he has done for the cause of medicine alone would take many pages. His modesty was such that few even of his friends realize how much he has done in the course of his busy life. Of his humanity and probity there is proof enough in the fact that he was revered and loved by all those with whom he came in contact.



Dr. Joseph Frank Payne.

At an early age Frank Payne was sent to University College, where he obtained a demyship to Magdalen College, Oxford. There he gained a reputation among his fellows as a zealous student, which was fully justified by his obtaining his B.A. degree with first class honours in 1862, the Burdett-Coutts Scholarship in Geology in 1863, the Radcliffe Travelling Fellowship in Medicine in 1865, and by his taking, in 1866, the B.Sc. degree at the London University.

He studied medicine for a time at St. George's Hospital, and then (in 1867) took his M.B. degree at Oxford; in the year following he became a Member of the Royal College of Physicians. Soon after, in compliance with the regulations of the Radcliffe Scholarship, Frank Payne went abroad. He spent a short time in Paris, three months in Berlin, where he attended, among others, the clinical lectures of Professors Frerichs and Traube, and then proceeded to Vienna. At the last-named town he came under the influence of the great pathological anatomist, Carl Rotinsky; of Professor Johann Skoda and of Johann Oppolzer; and there, also, he studied diseases of the skin under Hebra and Neumann. In 1871 he contributed to the British Medical Journal three articles, entitled, Recollections of the Medical School of Vienna, in which he gives a graphic description of his teachers and of their methods of teaching.

On his return to England, Payne was appointed Examiner in Natural Science at Oxford University; Assistant Physician to the Hospital for Sick Children, Great Ormond Street; and Demonstrator of Morbid Anatomy and Curator of the Museum at St. Mary's Hospital, where, according to a notice issued by the hospital, "*post-mortem* examinations are made by Dr. Frank Payne at 2 o'clock as opportunities occur."

Leaving St. Mary's, in 1871 he began his long connexion with St. Thomas's by accepting the Assistant Physicianship; he was elected Physician in 1887, and became Consulting Physician in 1900. During his long and valuable service to the hospital, lasting nearly thirty years, he contributed thirteen papers to the Hospital Reports, of which he was editor. One paper was on Plagues, Ancient and Modern. In 1875 he delivered the introductory address to the students, and in his speech he pointed out, among other things, that "medical studies, properly understood, contained many of the elements of a true liberal education," and that the "value of medical training as a liberal education depended chiefly upon its connexion with the physical sciences." Even in his early days at St. Thomas's, Dr. Payne's reputation as a pathologist was such that he was appointed to make a *post-mortem* examination in the Bravo case. While still at St. Thomas's, he was made Surgeon to the Hospital for Skin Diseases in Stamford Street, Blackfriars.

In 1873 he was elected a Fellow of the Royal College of Physicians, and was, as one of the four junior Fellows, at once appointed to deliver the Goulstonian Lectures; for these he chose as his subject, "The Origin and Relation of New Growths." Later on he delivered the Lumleian and the FitzPatrick Lectures, and in 1896 he was appointed by Sir Russell Reynolds to deliver the Harveian Oration. In 1892 he was asked to act as Secretary to the Committee appointed to revise the "Nomenclature of Diseases," and to edit and to bring out a new edition of the same.

In order to investigate and report on the plague then prevalent in Russia, commissioners were sent out to that country in 1879 by most European Governments. The British Commissioners selected for the purpose were Surgeon-Major Colvill and Dr. Payne. They arrived in Russia too late to view the actual epidemic, which, though fatal in its effects, was not widespread. No doubt it was his experience on this expedition which led Dr. Payne to take such a keen interest in the plague. He not only wrote a

paper about it in the St. Thomas's Hospital Reports, but lectured on it in the Parkes Museum, and also contributed an article on the subject to the *Encyclopaedia Britannica*. In this article he expressed his conviction that "personal contagion is inadequate to explain the transmission of the disease in certain circumstances, and its continued existence in certain places between the epidemics of human disease," and suggested "that infection or miasma of plague must reside in the soil like that of malaria, as well as in the bodies of infected persons." He added:

"If we take the expression 'soil' in a wide sense, meaning external nature, outside the human body, this belief has been confirmed since the discovery of the bacillus, for it is certain that it has a mode of existence quite independent of man in animals living underground, especially in rats."

Some years later he contributed an article on the plague to the *Quarterly Review*, October, 1901, which contained information invaluable to all subsequent investigators of the subject.

In 1899 Dr. Payne succeeded Dr. Munk as Harveian Librarian to the College of Physicians. Soon after his appointment he began to prepare a new catalogue of the valuable library, adding many volumes to it from his own collection of rare books. One gift he made was that of one of the earliest books printed at Cambridge—bearing the date of 1523, and was a volume much treasured by him.

Dr. Payne was a representative of the University of Oxford in the General Medical Council for the five years ending June 1904. He was also a member of the Executive, the Examination, and the Pharmacopoeia Committees of that body. As a member of this last committee he rendered valuable service in the arrangement of the Council's excellent library.

Dr. Payne was a member of the Royal Commission on Tuberculosis, and also an active member of the Pathological, the Epidemiological, the Dermatological, the Royal Medical and Chirurgical (now the Royal Medical), and many other societies, and a regular attendant at their meetings; he was President of the first three societies named and Vice-President of the last. He was also Examiner to most of the English Universities, to the University of Edinburgh, and Examiner in Medicine for the Murchison Scholarship and for the Parkes Weber Prize to the Royal College of Physicians.

Dr. Payne's literary productions are numerous—too numerous by far to be given here in full. Some idea of their character may be gained by the following inadequate enumeration:

Whilst Curator at St. Mary's Hospital he brought out a revised and enlarged edition of Jones and Sieveking's *Manual of Pathological Anatomy*. His own *Manual of General Pathology*, designed as introduction to the practice of medicine, was published in 1888; the preface to this is a model of clear and cogent reasoning, and shows how well he was acquainted with the works of Locke.

In 1889 he published *Observations on Some Rare Diseases of the Skin*.

His *Life of Sydenham* in the Masters of Medicine Series appeared in 1900. In this work he has given the world an entertaining and instructive picture of Sydenham himself, and also of the period in which he lived. The book is written with great clearness, and impresses one with the author's sound knowledge of his subject, and with his evident admiration of Sydenham.

A *Life of Linacre* had appeared nine years earlier (in 1881), written after the preface to *Galeni Pergamensis de Temperamensis Thoma Linacro interprete*.

The FitzPatrick Lectures (delivered in 1903) on English medicine in Anglo-Saxon times were published by the Clarendon Press. The second series of the same lectures (delivered in 1904), on "Gilbertus Anglicus" and "Ricardus Anglicus," and the Teaching of Anatomy in the Middle Ages, he was preparing for publication at the time of his death.

He wrote in Sir T. Clifford Allbutt's *System of Medicine* the history of medicine in modern Europe.

Besides all this, Dr. Payne contributed articles on the "History of Medicine" to the *Encyclopaedia Britannica* and a large number of lives to the *Dictionary of National Biography*, fifteen being in the letter "A" alone. Dr. Payne's addresses before different societies (and they were also numerous) were always interesting, full of suggestions and of information. Among some of the most noteworthy is that given before the Pathological Society on the "Morbid Anatomy and Pathology of Chronic Alcoholism." In this he gave a history of the subject from the first recorded case (one of cirrhosis of the liver, in 1626) down to recent times, and mentioned that Harvey began the study of its morbid anatomy, but unfortunately all his papers on the subject were lost. Another interesting address was that on the "Herbarius" and "Hortus Sanitatis," read before the Bibliographical Society in 1901. He also gave one on "Tuberculosis as an Endemic Disease" and another on "The History of Epidemiology" before the Epidemiological Society.

This sketch of Dr. Payne's life, which has been drawn from many sources, gives only a very inadequate conception of the man and his work. Johnson says the business of a scholar is to "talk in private, to think in solitude, to inquire, and to answer inquiries." Dr. Payne was certainly a scholar. As Congreve says of Dryden, it might also be said of him, "As his reading had been very extensive, so was he very happy in a memory tenacious of everything

that he read. He was not more possessed of knowledge than he was communicative of it; but then his communication was by no means pedantic or imposed upon the conversation, but just such and went so far as by the natural turn of the conversation in which he was engaged, it was necessarily promoted or required."

It is also true that he was "of a nature exceedingly humane and compassionate." "His friendship, when he professed it, went beyond his professions."

Notwithstanding his devotion to the care of the library for which he worked and over which he so long presided, he was ever ready to assist from his vast store of knowledge those who sought his advice, and the Library of the British Medical Association is indebted to him personally for fine folio copies of Hippocrates, *Opera Omnia* (Charterius), thirteen volumes in nine, 1679, and Morison, *Plantarum Historiae*, 1680–1699, and other volumes.

There is in the reading room of the College of Physicians a portrait, by Sargent, of Dr. Payne, taken just before his retirement from the office of Librarian to the College.

Sir R Douglas Powell writes: Dr. Payne was a man of singularly gentle and lovable nature, and the respect in which he was held by the Royal College of Physicians for his learning and fine literary qualities was associated with great personal esteem and affection. He was possessed of that love for the archaic in literature and that zest for hunting up ancient works and first editions which rendered him a worthy analogue of Davy Wilson, that archtype of book lovers so amusingly described by Mr. Oldbuck in *The Antiquary*. Although he conspicuously lacked the dusty habits and greed of gain characteristic of the original "Snuffy Davy," he had his "scent of a slow-hound and the snap of a bulldog" for anything of value in literature, and there was no one who more enjoyed a good find and subtle bargain in the form of an old book for the College library. He was, moreover, generous in many personal gifts to the library. Dr. Payne, during my presidency, instituted the plan of arranging a selection of the literary treasures of the College for inspection after the quarterly College Club dinners; these are greatly appreciated, and have increased the popularity and social interest of the dinners. The Fellows of the College and his many other personal and literary friends will greatly miss Payne's charming personality, but all their recollections of him will be sweet and pleasant memories.

Professor Osler writes: The dominant feeling in the minds of many of us is not so much regret at the death of our dear friend Dr. Payne—for had he not reached the Psalmist's limit?—but a deep sense of the tragedy of the extinction in the grave of so much sound learning. For Payne belonged to that small group of men in the profession of this country who not only possess an interest in the history of medicine, but the scholarship necessary for fruitful work at the records. In our generation he was the worthy successor of Adams, Greenhill, and Ogle—the last named happily still with us. Practical men who, like myself, dabble in these subjects as a pastime, owe an immense debt to these experts who maintain in the profession the fine traditions of the scholarship of Linacre, Caius, and Freind.

Dr. Payne's ambition was to see the story of the evolution of British medicine worthily presented. In his first Fitz-Patrick Lectures, 1903, he dealt, as no one else could have done, with the Saxon period, and in the second series, 1904, with the Anglo-Norman period. It is to be hoped that he has left the MS of the last series in a state fit for publication, as a companion volume to the first, as he had spent an extraordinary amount of labour in working out the history of Ricardus Anglicus and Gilbertus Anglicus. Dr. Cholmeley has in hand John of Gaddesden and his times. D'Arcy Power has recently given us the results of his valuable studies on John Arderne. Dr. Norman Moore has dealt with several aspects of medical education in the Middle Ages, and in numerous monographs and lectures, many by Dr. Payne himself, we have had presented the story of British medicine in Tudor and Stuart periods. Dr. Payne had made a special study of Sydenham, and his volume in the *Masters of Medicine* series is a model of careful biographical study. One of the great pleasures of his last illness was the Grangerizing of a copy of this work, extended into two large quarto volumes; and a pleasant memory of my last visit, after the Caius dinner at Cambridge, was the delight with which he showed me these beautiful volumes. A keen collector, his splendid private library bears testimony to a judgement ripened by long experience, while his generous gifts to the college showed that his mind kept pace with his riches. My first acquaintance with Dr. Payne takes me back to 1873, when he was interested in the Medical Microscopical Society, to a meeting of which, after a pleasant dinner, he took me one evening, and where I read (with many vasomotor accompaniments) my first scientific paper on the action of atropine on the white blood corpuscles. From that time, by correspondence at first, and then during my frequent visits to London, I came to know him intimately as a friend, and to appreciate his great work as a man and as a ripe and acurate scholar.

Mr. Horace Mallinson Barlow, Assistant Librarian, Royal College of Physicians, writes: In the lamented death of Dr. Payne medical science, history, and bibliography are deprived of a warm and loyal friend. With the various phases of his professional career, which was one of remarkable activity and success, the writer is incompetent to deal, but with Dr. Payne as historian and scholar, bibliographer and librarian, the following imperfect appreciation is concerned. It is indeed difficult to give any brief description of a man of such varied interests and attainments, and the writer is painfully conscious of his limitations in dealing with the life of one whose wide literary culture and inborn love of learning have been a source of inspiration and pleasure. To Dr. Payne, as Harveian Librarian of the Royal College of Physicians, it has been the writer's privilege and honour to serve as assistant for the all too brief period of three years, but from one who has profited by his wide knowledge of books and erudite scholarship these few impressions, it is hoped, will be received with indulgence.

Dr. Payne's services to the history of medicine can hardly be overrated. The reputation for scholarship and historical research which he made at an early period in his professional career has more than been confirmed by his medico-historical works. His life of Linacre, a most scholarly contribution to Renaissance biography, prefixed to the translation of Galen, *De Temperamentis*, is one of many proofs that he, like Linacre himself, was "possessed from his youth till his death by the enthusiasm of learning." With a profound knowledge of the great masterpieces of literature, scientific as well as classical, he illumined and enriched the minds of all who had the good fortune to seek his help and advice. He was fully conscious of the great principle that in every literary and scientific line of work he who makes use of the experience of his predecessors both saves most time and makes most progress. "No kind of knowledge has ever sprung into being without an antecedent, but is inseparably connected with what was known before." For the classic lines of Goethe no writer had a greater veneration:

> In dem Vergangnen lebt das Tüchtige
> Verewigt sich in schöner That.

To him these words were a doctrine, and many were the ways in which he sought to bring this doctrine a greater recognition. It is to be seen in his watchful and incessant care over the interests of the beloved library of his college. No work of a permanent historical interest would be cast aside without receiving the utmost consideration, and none would be added to the treasured collection until it had gone through a process of critical examination. Dr. Payne was of the true type of historian. His medico-historical studies reveal his love of the past, which, he says, is worthy of our study, and ever more so the further we advance. By these studies Dr. Payne has rendered a signal service to medicine, and for this service he has been and will continue to be held in grateful remembrance. These can only be referred to briefly. His History of Medicine in the *Encyclopaedia Britannica*, and his many medical lives in the *Dictionary of National Biography*, are pieces of elegant writing and sterling worth. In 1881 appeared his facsimile edition, already mentioned, of Galen, *De temperamentis et de inaequali intemperie libri tres, T. Linacro interpr.*, with his masterly life prefixed. In 1894 he edited William Boghurst's *Loimographia: An Account of the*

Great Plague in London in the Year 1665, with an introduction giving an account of the author, a description of the manuscript, which had hitherto remained unpublished, a critical estimate of the treatise and of the plague literature of the period, and a short general history of plague in England. His *Life of Sydenham*, 1900, a biography constructed from original sources, is one of the most readable, and certainly one of the most scholarly, volumes which have appeared in the Masters of Medicine Series, and for the task of writing this no one was more eminently fitted than the author. In October, 1896, he was entrusted with the honourable duty of delivering the Harveian Oration. For this he selected as his subject *The Relation of Harvey to His Predecessors, and Especially to Galen.* This important contribution to the history of medicine was published the following year. The article on the History of Plague in the *Quarterly Review*, 1901, was also from his pen.

In 1903 Dr. Payne was appointed first FitzPatrick Lecturer to the Royal College of Physicians. With his accustomed modesty, he expressed the wish that his eminent friend Dr. Norman Moore, to whom the conception of the lectureship and the plan under which it is to be carried out are due, had been appointed in his stead. The outcome of these lectures was a volume entitled *English Medicine in the Anglo-Saxon Times*, 1904, a learned work, like his life of Sydenham, full of original research. For some idea of the thoroughness with which he prosecuted these investigations, and of the difficulties attendant on the production of a treatise of this type, we turn to the introduction: "When we inquire into the state of medicine among ancient peoples in any bygone age, there are several sources of information which we have to examine. We have to inquire what general history and literature tell us about the medical profession, since we assume that there have always been doctors of one kind or another. We ask whether any laws are still extant showing the relations of the profession to society. Besides written documents, we search for monuments or inscriptions, often more trustworthy than books, bearing on the subject. We examine contemporary works of art for representations of medical scenes or personages. We look over the material antiquities preserved in museums, such as weapons, instruments, household gear, to discover surgical instruments as evidences of the state of medical and surgical art in those periods. Finally, more important and more copious in the supply of information than all these put together, we examine the literature of medicine itself, for where this is wanting, we can form but a very inadequate notion of the state of medicine at any particular time." These, mainly, were his authorities, and when we remember that the Anglo-Saxon depositories of learning—the churches and monasteries throughout the land—were at one time or another pillaged or burnt by the heathen invaders, there can be very few MSS. preserved to us for direct investigation. Indeed, the number of MSS. of the period in existence do not exceed a score. The most important of these is the "Leech Book of Bald." This, along with the Anglo-Saxon translation of the *Herbarium* of Apuleius Platonicus, and the Greek treatise *Peri Didaxeon*, the only existing MS. of which belongs to the twelfth century, are dealt with exhaustively. In 1904 Dr. Payne again delivered the FitzPatrick Lectures. These appeared in abstract form in the BRITISH MEDICAL JOURNAL, and treated of (1) "Gilbertus Anglicus," and (2) "Ricardus Anglicus and the Teaching of Anatomy in the Middle Ages." At the time of his death he was engaged in completing and extending them. It is fervently to be hoped that he had proceeded far enough to allow the work to be published.

Well known as a scholar and historian, Dr. Payne was no less famous as a bibliographer. His knowledge of early English medical works and of the various schools of botanical illustration, both English and foreign, was extensive and profound. Indeed, among bibliographers of his own class he stood *facile princeps*. With the writings of Dioscorides, Fuchs, Matthioli, Cesalpino, Gesner, Dillenius, Lobel, and Dodoens, and of all the great botanists of our own country he had an intimate first-hand acquaintance. One of the most distinguished members of the Bibliographical Society, and an occasional contributor to its *Transactions*, he delighted his fellow members with two of the most learned disquisitions on the early history of herbals that have ever been penned—and, indeed, in recent years the only two works of any importance on the subject. One of these, *On the Herbarius* and *Hortus Sanitatis*, which appeared as a separate work in 1901, was a successful attempt "to describe the earliest printed books in European literature devoted to the illustration of natural history; to fix the date and order of the several works known by the names of *Herbarius* and *Hortus Sanitatis*; and to show their connexion one with another, and with some other works of the same class." The patient, laborious, and exhaustive research which the composition of this essay involved must have been enormous, as the materials were mainly derived from actual inspection of the works themselves. And, as some of the editions were not accessible in this country, the treatise shows Dr. Payne's intimate acquaintance also with standard bibliographical works, such as Hain, Panzer, Pritzel, Proctor, Choulant, and others. To the second paper, which has not yet been published, the writer had the pleasure of listening, and also of inspecting the unique collection of early Herbals which were brought from Dr. Payne's own library at New Barnet to illustrate the subject. This paper was received with enthusiasm and astonishment. The foremost bibliographers of the day who were present at the meeting, and who are in the habit of following up each discourse with learned and abstruse discussions, were unable to make any material additions to the subject. All were loud in their praises of Dr. Payne's mastery of the subject. For these two pioneer works the medical bibliographer of the future must ever feel grateful.

It is the business of the true bibliographer to deal with editions, peculiarities, title pages, colophons, printers, dates, types, places, sizes, illustrations, and collations, and with all these, with the possible exception of types, Dr. Payne was concerned. As an example of the thoroughness with which he prosecuted his inquiries, of his sound critical judgement in determining the relations of one copy to another, the *Herbarius* of 1484, the first work printed in Germany with woodcuts of plants, may be taken. For a long time the Venice editions gave rise to the error of attributing this work to Arnold de Villa Nova, a physician of the thirteenth century, who never wrote any such book. Here is Dr. Payne's explanation of the error. "In the original preface names of Arnold de Villa Nova and Avicenna are quoted, which induced the printer of the Vicenza edition of 1491 to place on his first leaf a large cut of these two philosophers with their names underneath. In the edition of Venice, 1499, these figures are wanting, the printer apparently not possessing the block, but the names were allowed to remain, and thus appeared to be those of the authors; or, the name Avicenna being regarded as a sort of title, it appeared in the misleading form given by Hain—'Arnoldus de Villa Nova de virtutibus herbarum seu Avicenna.' The error of attributing the work to Arnold is peculiar to the Latin editions printed in Italy, and appears to this day in the catalogues of Italian booksellers."

For many years it was Dr. Payne's delight, at the college dinners, to arrange small exhibitions of rare and interesting books taken from the shelves of the College Library, and on these occasions one could never enter the Great Hall without finding a little band of book enthusiasts surrounding a table case, listening with interest, profit, and pleasure to the masterly expositions of obscure points in the authorship, printing, and publication of the various works exhibited. His catalogue of the numerous MSS. in the Library of the College is a model of neatness and accuracy, of patient and painstaking industry. In all his bibliographical pursuits it may indeed be said of him: "Nihil tetigit quod non ornavit." Every line bears the stamp of scientific inquiry.

The loss which the Royal College of Physicians has suffered by his death is difficult to estimate. In 1899 he succeeded Dr. Munk as Harveian Librarian, and for more than ten years he held the office with unceasing faithfulness and devotion. Having retired from active practice, he found the work thoroughly congenial to him. Dr. Payne was the ideal type of scholar-librarian. As the later years of his life were occupied in literary work and historical research, one wonders how so much of his valuable time could have been given to the various details in the active administration of the library. But nothing

was ever too great or too trivial for his attention. Day after day found him at work probing into the obscurities of some dead and forgotten manuscript, or collating some old and rare edition with all the care and accurateness of the scientific bibliographer. His zeal for the acquisition of old historical works and the manner in which his profound knowledge of the College and its associations led him to detect almost by intuition as it were the various items of importance in the numerous catalogues of second-hand booksellers were remarkable. His attention, even to the smallest detail in the equipment and organization of the library system, was never divided, and his intimate acquaintance with almost every work of interest in the vast collection of old and rare medical works in the College Library testify to that thorough and whole-hearted manner in which he fulfilled his duties in every phase of his busy life. Volume after volume, in which one finds such phrases as "editio princeps" and "liber rarissimus" lightly and carefully pencilled on a fly-leaf or inside cover, have come with remarkable frequency before the writer's notice, thus showing that at some period or other during his term of office probably every book had passed through his hands.

Dr. Payne had the interests of the library dearly at heart. Elected to the office in January, 1899, he set to work almost immediately to increase its utility by introducing a number of reforms. He found that the increase of the collection fell far short of what it should have been, whether by presentations or purchases, and his suggestion to the Library Committee that Fellows of the College be requested to present copies of their works was embodied in a resolution passed at a subsequent comitia. He studied the convenience of readers with a sympathy as earnest as it was practical. Numerous alterations in the arrangement of the books were effected. All reference works were collected together, as they should have been, and placed within the reach of readers in the reading room. The general state of the library was reported on, and various periodicals of a non-professional character were discontinued, and others more in keeping with the nature of the library were acquired. At his instigation the separate catalogues of the various bequests were incorporated into one general alphabet, thereby increasing the facilities for reference work. In addition to these improvements he caused a subject index to be prepared of all books published since 1880, and a matter of far greater moment was his drafting of rules to safeguard the priceless literary treasures the library contained. On his recommendation certain classes of books were not allowed to be taken away. These included all books before 1500, if printed abroad, and all before 1600 if printed in England, books valuable for their associations such as first editions of the works of Caius, Harvey, Sydenham, and others, or those with important inscriptions and autographs, and manuscripts of every age. These decrees revealed the spirit of the true librarian and bibliographer, whose duty it is to preserve these "monuments of antiquity" from the hands of careless readers. The college library was enriched to a considerable extent, not only by his constant and assiduous attention to the catalogues of second-hand booksellers, both English and foreign, but also by his own numerous gifts. Many choice examples of the typographic art were taken from his own private library to fill up gaps in the shelves of the College. Among these may be mentioned exceedingly rare and valuable works, such as Galen, *De Temperamentis. T. Linacro interpr.*, 1521, from the press of John Siberch, the first Cambridge printer; Galen, *De Naturalibus Facultatibus*, 1523; *De Pulsuum Usu, T. Linacro interpr.* [1522]; and *De Motu Musculorum, N. Leoniceno interpr.* [1522]—all from the famous press of Richard Pynson, one of the earliest London printers. When it may be safely asserted that works such as these rarely, if ever, find their way nowadays into the sale rooms, it must be apparent with what degree of self-denial he stripped his own unique collection of these priceless treasures to enrich the library of the College. Other gifts were first editions of Servetus and Sydenham, the 1532 edition of Linacre's Latin grammar, and the second printed Greek text of Hippocrates, Basle, 1538.

Even the smallest details were the object of Dr. Payne's patient attention. In the library he worked, the scholar librarian and bibliographer, imparting to all who sought it, in the spirit of the true philanthropist, without noise or display, the knowledge he accumulated during long years of intellectual activity and persistent study. His severe accuracy and desire for absolute perfection—although none was ever more willing to own a mistake—his forbearance with the faults and failing of others, made him a model worker, despising no suggestion, evading no difficulty. This inestimable quality is to be found in the opening lines of his Harveian Oration. All progress was to him the final resultant only of all the endeavours of men in past times to penetrate the secrets of Nature. "When," he writes, "we look back upon those strivings, they often seem perverse and contradictory; men at certain periods seem to have gone backward rather than forward; we are struck less by the few grains of truth than by the great mass of what we call errors. But let us speak gently of those errors, and call them rather imperfect truths, for, in science at least, the truth of to-day is error to-morrow." This is the spirit in which he laboured, in which he criticized and corrected the work of his pupils and subordinates. A few months before his death ill-health caused him to resign his office, and for his distinguished services he was honoured with the title of Emeritus Harveian Librarian. He is succeeded by his learned friend and Fellow of the College, Dr. Norman Moore.

As a collector of books, not in extent, but in the choiceness and rarity of his copies, Dr. Payne follows in the steps of Mead, Radcliffe, Askew, and other great bibliophiles. His collection of Incunabula and rare first editions of the works of early English medical writers in the old historic founts of the early English printers must be the envy and delight of every antiquarian of moderate means. The shelves in his library at New Barnet are packed in double rows with unique specimens of early typographic art. And his collection of Miltoniana, including also first editions of the rarer works of the great poet, would be the boast of any institution. And how great was the delight with which he produced his coveted tomes for the inspection and admiration of his visitors and friends! The few occasions on which the writer has been privileged to spend amidst such a brilliant assembly of choice and valuable works have indeed been "crowded hours of glorious life."

In his home life Dr. Payne was probably seen at his best. With a mind well balanced, full of a knowledge of the best men and things of the world, always ready to yield to the opinions of those whom he considered better informed than himself, ever eager to listen to the conversation of those beneath him; genial, kindly, and sympathetic, a profound scholar, without any signs of pedantry, utterly devoid of self-interest and self-seeking, no one more genuinely humble, he endeared himself to all with whom he came in contact. His death we deeply mourn.

Is it not written, "By their deeds ye shall know them"?

Dr. H. Selfe Bennett writes: I am grateful for the opportunity afforded to join my voice in the chorus of eulogy that must follow the news of the death of J. F. Payne. We are bidden to "speak no evil of the dead," but in this case it would be impossible so to do, for he had no enemies who could disobey this charitable injunction. It is not mine to sing of his professional attainments; these will be dealt with by abler pens than mine. It is concerning his personal qualities I am permitted to speak of that which I know; for, although, whilst all members of the profession who were privileged acquaintances will mourn his loss, those of us—and they are many—who were proud to count themselves amongst his friends will sadly miss his advice and companionship.

It falls to the lot of but few men to arrive at that Corinth of affectionate admiration and esteem reached by him over whom the grave closed on Saturday last. That this goal was attained by Frank Payne, as his familiars called him, was evidenced by the distinguished company that assembled to render homage on that last occasion on which the Royal College of Physicians, his university and hospital colleagues, the Local Government Board (all fully represented at the funeral) could show the respect in which he was held. How came it that he whom his brethren delighted thus to honour obtained such tribute? The answer is undoubtedly by honest merit and high character. It is true that Payne was an eminent and exceptionally learned man, but if he had used his mental

attainments for purposes of self-advertisement and aggrandisement his learning alone would certainly not have produced this effect upon his fellows.

It was the natural modesty of true greatness which prevented any glitter or parade of his learning. There is an illustrative story told of him many years ago, that one wet Sunday, in Switzerland, a young lady came into the salon of the hotel, and found a semicircle round Payne, who was distributing his golden store of information to any who cared to listen. Her comment at the close was: "To think that I sat next to him at *table d'hôte* for *three* nights, and all he said was 'Please pass the salt?'" The story is probably true; at any rate it demonstrates what has been already said—namely, that there was an entire absence of any attempt to shine in conversation, or of self-assertion. Yet you had only to ask and it was given to you; you had, as it were, simply to scratch the soil, and the treasure was apparent. If you went to Payne for information on *any* subject, whether it might be pathology, Chinese ware (not music), furniture, binding, medical and other history (ancient or modern), to mention only a few matters on which he was an authority, you would be rewarded abundantly with full measure, running over. If you were in his library, he would get down from his shelves the book from which his knowledge had been acquired, not for the purpose of refreshing his memory—which was extensive and peculiar—but to confirm what he had already told you. Whilst you sat in an old Chippendale armchair he would discourse at large on any matter of interest, interspersing his remarks with an occasional "What?" after the royal manner attributed to George III. He seemed to be of Dr. Johnson's opinion, "All knowledge is of itself of some value. There is nothing so inconsiderable, that I would not rather know, than not." Yet Payne was no mere bookworm, no dry-as dust, no dictatorial pedant, nor was the so-called "Oxford manner" at any time in evidence. As to his "bedside manner," it is possible that it was not impressive, but if so, the reason, partly at any rate, was because he knew so much that his knowledge included that of his own ignorance and mental limitations; partly also, no doubt, because his bodily presence was not imposing; there was, in fact, nothing at all "imposing" about him—his learning, indeed, was colossal, though his physical structure was not. This, however, did not preclude his being what the ladies call "a dear," for he was both a lovable and a clubable man. He had, moreover, the saving grace of humour which seldom accompanies profound learning. He enjoyed a joke or a good story as much as any one; in other words, he was not in any way dehumanized by mental excess.

Some years ago Payne expressed his pleasure with a present he had received from a friend—namely, a copy of *The Gold-headed Cane*, a little book published in 1834, written by Dr. MacMichael, containing the history of the celebrated physicians who had owned the cane which is now in the library of the Royal College of Physicians; this copy was "Grangerised," or extra-illustrated, with a number of portraits and views of persons and places mentioned in the text. He was still further pleased, in his capacity as Harveian Librarian, when a similar copy of the same book was presented to the library of the College. These gifts probably engendered in him the desire which he subsequently developed to illustrate in the same way his life of Thomas Sydenham, which he had written and which had been published by Fisher Unwin in 1900 as one of the series of Masters of Medicine. To this end he had this crown octavo work enlarged by "inlaying" to large quarto size and then divided into two volumes, with specially printed titles. In these volumes were inserted and subsequently bound up 120 fine portraits and views. About Whitsuntide of this year he wrote to the man who had so successfully inoculated him with the virus of his hobby. "I am making an index to the additional plates of the Sydenham. . . . The total number is nearly or quite equal to the number of leaves in the book," and shortly before he took to his bed in his final illness he had the satisfaction of being able to show to his friend, Professor Osler of Oxford, the completed work handsomely bound in morocco. This pursuit had doubtless been a source of much pleasure to him since his impaired health necessitated retirement from active work. Yet he still continued until within a few weeks from the end of his labours to take an active interest in all matters that related to science, medicine, and literature. Although he attained the three score and ten years of the Psalmist he never appeared to be an old man; many younger gray-haired men looked his seniors, but his strength was abated, and, realizing that his life's work was finished, he faced the common fate with courage and philosophy: he became a good patient as he had been a good doctor; happy in his domestic relationships, he left a widow, son, and daughters to mourn his loss; his friends and the whole profession are the poorer for his death. Our friendship dates back close upon forty years, but it was not till his retirement to "the northern heights" that he constituted my P.S.A. society, where I "sometimes counsel took and sometimes tea," and thus became more intimate with him. Medicine has ever been recognized as a learned profession, and Payne was emphatically a learned physician; there are doubtless others of whom we are proud, but the type which he so well represented in these days of depreciation of classical training, is unfortunately getting rapidly "small by degrees and (?) beautifully less." Nevertheless, there be some still amongst us who do not recognize the new style as necessarily an improvement upon the old, who do not always and altogether believe in the adage, "Uno avulso non deficit alter." The race may replace him, but those who loved him cannot.

In a letter to Dr. Sharkey which has kindly been placed at our disposal, Dr. Payne's son, Mr. BURNELL PAYNE writes:

As to father's domestic and holiday life, you probably know enough of his character to guess what they were like in some respects. He was all his life a great reader, not only in the subjects with which he was immediately concerned, but in general literature, of which he had not only great knowledge but the artistic appreciation. He had also very strongly the antiquarian's interest in books—in rare editions, printing, bindings, etc.—and was a great devourer of booksellers' catalogue, being always on the look-out for rare medical works. In his younger days he collected china, and he had a great appreciation of all forms of art. He did not go in for games or any kind of sport, but he loved the country and the sea, and for a holiday liked to go away to some quiet country place where he could rest and enjoy Nature. In his younger days he walked a good deal, and from his boyhood he had a great love of natural history; he was always collecting flowers or fossils when in the country. He had enjoyed his garden very much in the last few years, and took a great interest in it.

I hope I have said enough to give you some idea of his domestic life. He had, as you probably know, a wide circle of friends and liked few things better than talking. I should say that with congenial people he was a decidedly sociable man. With us he was always tolerant, genial, and humorous, and so self-effacing and modest that I feel now that when he was alive I never appreciated him enough.

Universities and Colleges.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

ANNUAL MEETING OF FELLOWS AND MEMBERS.

ABOUT sixty Fellows and Members attended the annual meeting of the Royal College of Surgeons of England, which took place on November 17th. The President, Mr. Henry T. Butlin, was in the chair.

The President made a commentary upon the annual report of the council, an abstract of which was published in the JOURNAL of November 12th, p. 1568, dealing especially with the paragraphs relating to the amendment of the Midwives Act, the regulations with regard to the administration of anaesthetics, and the acquirement of the Odontological Collection of the Royal Society of Medicine. The college had now, he said, the finest odontological museum in the world. It was true that it was upon loan, but if the Royal Society of Medicine desired at any time to regain its possession they would have to reimburse the college for the sum spent upon installing it. The contingency was, he thought, unlikely to arise.

A number of questions were put by Members, chiefly relating to the procedure adopted in removing names from

the college roll, four such having been expunged during the year covered by the report. One or two of the questioners desired to know if it followed in natural sequence that when a name was removed from the *Medical Register* it was erased from their own list? Did the college hold an independent investigation? The President replied that when an accused person held the college diploma his case was most carefully considered. It happened sometimes—although, naturally, such instances were rare—that the College Council did not agree with the finding of the General Medical Council. On the other hand, they had on occasion availed themselves of the information contained in the shorthand notes of the General Medical Council's inquiry. Personally, he felt it a tremendous responsibility to deprive a man of his diploma, and he assured the questioners that the utmost care and patience were exercised in the matter.

Mr. Joseph Smith, J.P., then moved:

> That this twenty-sixth annual meeting of Fellows and Members again affirms the desirability of admitting Members to direct representation on the Council, which (as now constituted) does not represent the whole Corporation; and that it does so in order that the constitution of the Council of the Royal College of Surgeons of England shall be in keeping with modern ideas of true representation.

He said that, although the petition of the members for representation on the Council had been presented year after year, it had been met persistently by a refusal unsupported by argument. To him it was astonishing that the councillors, "many of whom he knew to be right-minded men," should become so demoralized by their office as to maintain the present anomaly. He appealed to the President to allow his term of service to be marked by the bestowal of this tardy justice.

Dr. S. C. Lawrence, in seconding the resolution, condoled with the Council upon the poor results that had followed from opening to women the examination for diplomas. He had previously elicited that there was but one woman Member of the College at the present moment. He also pointed out that the proportion of Members to Fellows, which was fifteen to one in 1888, was about eleven to one in August, 1910. The Council were apparently working towards a millennium in which their constituents would be simply the Fellows and one Member, and that a lady. He criticized certain expenditure—the donation of 100 guineas to a neighbouring church, an item of £240 for a dinner to celebrate the jubilee of Licence in Dental Surgery—and said that the Council which thus spent the money of the body corporate, while denying to the members a voice in the management, "ought to be covered with shame as with a garment, and one hobble-skirt amongst them was totally inadequate." He read a letter, which he said was typical of others received by the Society of Members of the College, of which he was honorary secretary, in which a practitioner wrote that it had become his custom to describe himself as "an 'L.R.C.P.,' leaving out the 'M.R.C.S.' whenever possible."

Mr. F. W. Collingwood said that the constitution of the college was mediaeval, and the attitude of its Council contrary to all principles of equity and good sense. He prophesied for the college the speedy fate of those institutions which failed to assimilate themselves to a new environment.

Dr. W. G. Dickinson caused some amusement by quoting a few sentences from Mr. Butlin's presidential address before the British Medical Association describing the struggle to secure the direct representation of the profession on the General Medical Council: "I would have it (the story of that struggle) printed in large type and set up in every building which is devoted to the service of the Association, that all men may find in it an object-lesson of what can be done by patience and perseverance, by determination and tenacity of purpose." Would Mr. Butlin, he asked, have the story of the reform party of the college engraved on the walls of their own institution?

Sir Victor Horsley asked whether it were not possible, even at that late hour, to give the Members some idea as to the report of the committee which had inquired into the subject? Members were entitled to know the grounds of their exclusion.

The President said that the whole of the report on the subject of council representation was embodied in the report of the Council for 1907.

Sir Victor Horsley said that he was referring to the present report, Section ii, in which it was stated that a special committee advised the Council on the subject in March of the present year.

The President replied that the report of this committee consisted only of the statement made in Section ii of the Council's report. ("Oh!")

Sir Henry Morris said that he would explain. A lengthy statement, embodying a variety of reasons and objections, was published in the report of a few years ago. When the matter arose at the last annual meeting and was referred to a committee, that committee took the whole of the former report into consideration, and inquired as to any new facts or arguments which might justify modification or reversal of the previous decision. They came to the conclusion that nothing fresh had been brought forward, and therefore their report was a reaffirmation of the antecedent finding.

Mr. Collingwood: Will the President tell us whether any voting was taken in the secret conclave upon this subject?

The President (smiling): I think I remember some voting.

A Member said that he would give notice of motion that a deputation be formed to wait upon the Council.

Mr. Smith's resolution, on being put to the meeting, was carried *nemine contradicente*, and the proceedings concluded with a vote of thanks to the President, the sponsors of which were the proposer and seconder of the hostile motion.

Public Health
AND
POOR LAW MEDICAL SERVICES.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

Shropshire.—Based upon an estimated population of 243,238, the birth-rate in the administrative county of Shropshire in 1909 was 23.8 per 1,000, the corrected death-rate 13.4 per 1,000, and the infantile mortality-rate 91 per 1,000 births. The reports from the rural districts show that old, dilapidated, and very small houses are common, but that their closure is impracticable, owing to the absence of better accommodation; and similar conditions are to be found in many of the urban districts. Dr. Wheatley points out that where housing accommodation is unsatisfactory, and private enterprise is not sufficient to provide an adequate supply of new houses, the sanitary authority should either itself build dwellings under the provisions of Part III of the Housing of the Working Classes Act, 1890, or the existing houses should be maintained in the highest possible state of efficiency. He urges that this can only be done by a frequent and thorough house-to-house inspection, followed up by action wherever necessary. He further very properly points out that the enormous importance of this inspection as a conservative agency has not been sufficiently realized. An instruction has been issued by the County Education Committee that children who have suffered from diphtheria must not be allowed to return to school until their throats have been declared free from diphtheria bacilli. Two further precautions, in Dr. Wheatley's opinion, should be adopted as soon as the machinery at the disposal of the sanitary authorities or the education authority is adequate for carrying them out. These are that all persons living in a house in which there is diphtheria should have their throats swabbed before the house is disinfected, and children from an infected house should not be admitted to school until certified that they are free from diphtheria; and that during the prevalence of diphtheria in a school all sore throats should be notified to the medical officer of health of the district, and the affected children should not be readmitted until he is satisfied, by bacteriological examination or otherwise, that they may do so with safety.

POWERS OF GUARDIANS WHEN APPOINTING MEDICAL OFFICERS.

Buckra asks several questions in reference to the powers of guardians when appointing workhouse and district medical officers, and to these questions our collective answer is as follows:

*** We know of no regulation which limits the choice of guardians on appointing a workhouse medical officer to candidates residing in the same district as that in which the workhouse is situated. Guardians are not *compelled* to appoint as district medical officer a resident in the district, but in the event of a vacancy any or all such candidates would be regarded as having a prior claim to that of non-residents. The medical district and not the parish is the area to be considered for all such appointments. All Poor Law medical appointments are subject to the confirmation of the Local Government Board.

Prince Alexander of Teck presided at the Court of Directors of the Royal Sea-Bathing Hospital on November 21st, when the committee reported that the new ward and day rooms were completed, and that there were now a few vacancies for the male patients, but there were 20 female applicants on the waiting list.

Letters, Notes, and Answers.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* BRITISH MEDICAL JOURNAL *are devoted will be found under their respective headings.*

QUERIES.

L. R. C. asks whether there is any better astringent local application for chronic internal haemorrhoids than the old ung. gallae c opio.

S. D. C. would be grateful for information of Dr. Thomas Goodman, whose appointment as Physician-in-Ordinary to King George II appears in the *London Gazette*, October 7th, 1727. Dr. Goodman's name does not appear in Munk's *Roll of the Royal College of Physicians* nor in the *Dictionary of National Biography*.

TREATMENT OF FLAT-FOOT.

BODMIN asks for advice in the treatment of flat-foot. He has tried the effect of the Swedish exercise termed "heels raised" which means walking round for a few minutes on the toes with the heels well raised from the ground. He suspects that in some cases it makes the condition worse. He wishes to know whether an arch instep would be of use as a curative agent.

COFFEE.

M.D., D.P.H. writes: I should like to know whether it is generally recognized that Java is less deleterious to the nervous system than "Mocha" coffee. That has been the experience in my own circle, and I have recently heard such an assertion made by my cook, a German, as if it were a well-known thing. The Java has another advantage—it is much cheaper.

INCOME TAX.

ONE IN DIFFICULTY writes: A., B., and C. are partners. The profits of the practice are divided as follows: A. receives one-half and B. and C. each one-quarter. C. leaves the partnership on September 30th, 1909, and his part of the practice is sold to D., while A. and B. continue in partnership and make a new agreement whereby A. receives two-thirds of the profits and B. one-third. In assessing his income for income tax, B. in April, 1910, sends in Form No. 11, calculating his profits on the average of the three years ending March 31st, 1910—that is, on a quarter share of profits received from April 1st, 1907, to March 31st, 1908; from April 1st, 1908, to March 31st, 1909; from April 1st, 1909, to September 30th, 1909; and one-third share of profits received from October, 1909, to March 31st, 1910. In October, 1910, the surveyor of taxes informs B. that "in estimating the averages it is not a question of averaging the income of A. and B., but of averaging the profits of the practice, and, in arriving at the average, the actual profits of the practice, including C.'s profits, must be taken for the three years 1907, 1908, and 1909, and that average will be a figure for the assessment for 1910–11, and this assessment will be divisible as between A. and B., in accordance with the profits of each under the arrangement." The surveyor sees that this method would be disadvantageous to A. and B., and therefore wishes their income to be assessed on the actual profits received by each partner during the first year of the new agreement—that is, from October 1st, 1909, to September 30th, 1910. This last method, though fairer than the previous one, yields a larger figure than the method adopted by B. What should B. do?

*** The method proposed by B. is not in accordance with the system of the Income Tax Acts, and B. cannot insist on its adoption. He will be well advised to accept the solution proposed by the surveyor.

DERMATITIS EXFOLIATIVA.

R. F. O. writes: I have a somewhat serious case of dermatitis exfoliativa, of a relapsing character. It has supervened on a sharp attack of influenza, five weeks since. In that five weeks he has had three attacks of the desquamation, each attack preceded by rigors, prickling heat of the body, headache (left side), dimness of sight, temperature rising to about 102° and malaise, with very febrile urine. He got over the influenza as well as most cases do, and got up. He was treated with sodium salicylate, and after getting up with an acid mixture with quinine, and as there was some irritation of the skin, arsenic with it. He did well for a few days, and then developed the first attack, which did not seem to be so very severe, but each one has been more and more severe. The body was and has been before each attack red all over. I cannot see any other diagnosis but that of dermatitis exfoliativa. I am treating the attacks as they recur with a diuretic mixture, rest in bed, and careful diet, and no stimulants.

ANSWERS.

R. H. S.—We have made inquiries of a number of bacteriological experts and others, but have failed to trace any description of a serum treatment of diabetes mellitus. This disease has, we believe, been treated by means of a vaccine on one or two occasions, but no published accounts of the form of case or of the results can be found.

F. D.—Our correspondent will find details of the treatment as to which he asks for information in Professor P. W. Latham's *Pathology and Treatment of Rheumatoid Arthritis* (Deighton, Bell and Company, Cambridge, or George Bell and Sons London, price 1s. 6d.).

IMMUNITY.

SOCIOLOGIST.—A simple treatment of a highly complex and controversial subject like the modern doctrines of immunity does not exist, but some of the works are less technical than others. Among the simplest and fairest general surveys with which we are acquainted, we should place Dr. d'Este Emery's book, *Immunity and Specific Therapy* (Lewis, 1909), and the chapter on immunity in Clifford Allbutt and Rolleston's *System of Medicine*, written by Professor Ritchie, among the first and best.

RHEUMATOID ARTHRITIS.

DR. JAS. P. BOLTON (Nottingham) writes: "Arthritis" would find the remedy he needs for rheumatoid arthritis in high-frequency current massage.

DR. F. P. ATKINSON (Bexhill-on-Sea) writes: In reply to "Arthritis," allow me to suggest the application each day of Chili paste, and over this a wet compress (changed night and morning). This is a favourite method with hydropaths, and I think he might also try with advantage Naline's "Histogenol," which is a combination of nucleopsarine and disodic methylarseniate. It may be obtained of Messrs. Roberts and Co., New Bond Street.

Dr. H. J. THORP (Ipswich) writes: I recommend the following treatment:

℞	Am. chlor.	gr. xv
	Pot. iodi	gr. iij
	Ac. carbol.	gr. 1½
	Sp. menth. pip.	gr. v
	Aq. chlorof.	℥j
	Glycerin.	℥ss

M. T. d. s. in water. Sulphur as an aperient.

℞	Guaiacol	℥j
	Tr. iodi	℥vij

M. Ft. lin. To be painted on the affected joints night and morning.

LETTERS, NOTES, ETC.

ANEURYSM OF THE AORTA.

IN a paper by Dr. Jordan on the Roentgen-ray appearances of intrathoracic aneurysm, which appeared in our issue for November 19th, a mistake occurred at the bottom of the second column of p. 1576. By the dropping out of a letter the word intended to be used, namely, "futility," was converted into "utility." The paragraph describes a case in which a pulsating abdominal tumour (which prima facie might have been connected with the liver) had been diagnosed as an aneurysm of the abdominal aorta. An *x*-ray examination showed that this diagnosis was correct, but that the thoracic aorta was uniformly dilated throughout its entire length. The futility of surgical treatment of the abdominal condition was therefore placed beyond doubt.

ERRATA.

IN a leading article on the Dresden Hygiene Exhibition which appeared in the BRITISH MEDICAL JOURNAL of November 19th, reference was made to Lord Lytton as "Chairman" of the Board of Trade. Though this inadvertence is so obvious as scarcely to require correction, we desire to apologize to Lord Lytton for the mistake. He should, of course, have been described as Chairman of the Royal Commission for the International Exhibitions of Brussels, Turin, and Rome.

In the article on "Miner's Nystagmus" by Mr. H. S. Elworthy, F.R.C.S., in the JOURNAL of November 19th, p. 1378, col. 2, line 13, the word "not" was inadvertently omitted. The sentence should read: "4. *Mixed.*—An alternating lateral and vertical nystagmus in irregular sequence, producing not rotation but irregular movements." This is intended to describe those cases in which the movements of the eyes are in every direction, without any orderly sequence.

We regret that, in the leaderette on "Pseudo-Hourglass Stomach," in the same issue of the JOURNAL, p. 1648, Dr. Arthur F. Hertz should have been referred to throughout as "Dr. Herz."

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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A whole column	2	13	4
A page	8	0	0

An average line contains six words.

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